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ABSTRACT

This workbook contains exercises for use with college students to teach them about the use of census data and to help them acquire census related skills. The workbook supplements "Census '80: Continuing the Factfinder Tradition," an undergraduate textbook published in early 1980. The volume is divided into two parts. The first provides an overview for instruction. Each exercise is described briefly with notations on the skills that the activity develops. Italicized notes draw the instructor's attention to special preparation of materials that may be needed. The two charts that accompany this section aid in the decision whether to chose a particular exercise and in preparation for its subsequent use in the classroom. Specific reports that must be available for students to complete the various activities are cited. Since many of the desired 1980 census reports may not be published until late 1982, most examples were drawn from 1970 materials and include instructions that allow either 1970 or 1980 data to be used depending on availability. The exercises are located in the second part of the workbook and are organized according to six themes: collecting the data; accessing the data; the fieldwork interface; numerators and denominators; applications in the public sector; and applications in the private sector. For each exercise there is an introduction/rationale, a problem which includes steps the student must follow, and suggestions for further work. (Author/RM)

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CENSUS '80:

Projects for Students

The exercises in this workbook have been prepared for use by instructors of classes that deal with the use of census data or the acquisition of census-related skills. It blends the contributions of instructors from several disciplines with format and content revisions by Census Bureau personnel. In that sense, the workbook represents a sampler of student activities and projects that were developed to meet the academic needs of individual instructors; it does not, however, represent an endorsement of selected conceptual or methodological approaches by the Bureau of the Census.

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The CCSP staff is indebted to David G. Bennett who provided the impetus for this publication by collecting and organizing the exercises into a useful format and to the contributors whose names are cited in the introduction. Editorial review was provided by Claudette Bennett and Russ Davis. Clerical assistance was supplied by Patricia Boteler, Angela Bresnahan, Margaret Lucas, Kathleen Moyer, and Diann Prince.

To provide comments on this publication, to submit additional census-related classroom exercises for CCSP review, or to be placed on the mailing list to keep abreast of new CCSP products, write to: College Curriculum Support Project, User Training Branch, Data User Services Division, Bureau of the Census, Washington, D.C. 20233.

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Contents

INTRODUCTION....iv

CONTRIBUTORS....vi

AN OVERVIEW FOR INSTRUCTORS

Collecting the Data....vii
Accessing the Data....vii
The Fieldwork Interface....ix
Numerators and Denominators....x
Applications in the Public Sector....xi
Applications in the Private Sector....xii
Chart: Project Characteristics....xiv
Chart: Resource Requirements....xv
Chart: Provisional Product Release Schedule....xvi

COLLECTING THE DATA

1.1 Handling the Reapportionment Issue....2
1.2 Count Yourself In....4

ACCESSING THE DATA

2.1 Evaluating Census Data for States and SMSA's....8
2.2 Cost-Effectiveness of Data Search Methodologies....10
2.3 Understanding Census Geography Concepts for the City....14
2.4 Statistical Resources that Collect and Refer....16

THE FIELDWORK INTERFACE

3.1 Census Tract Analysis....25
3.2 Windshield Stratification Survey....28
3.3 Perspectives on Poverty....30

NUMERATORS AND DENOMINATORS

4.1 Measures of Population Growth....32
4.2 Some Basic Demographic Measures....38
4.3 Using the Location Quotient to Compare Data....54

APPLICATIONS IN THE PUBLIC SECTOR

5.1 Using Block Data to Plan Community Action....58
5.2 Combining Census and Public Opinion Data to Solve Community Problems....62
5.3 Allocating State Money for Poverty Areas....54
5.4 Wards for Abbeyville....65

APPLICATIONS IN THE PRIVATE SECTOR

6.1 Identifying the Market: The Use of Surrogates....76
6.2 Trading Areas: Assumptions and Reality....80

Introduction

The idea for CENSUS '80: Projects for Students emanated from a desire to publish a volume of exercises and projects to accompany CENSUS '80: Continuing the Fact-finder Tradition, an undergraduate textbook published in early 1980. Both publications are products of the Census Bureau's College Curriculum Support Project.

Since Projects for Students is being published before the availability of most 1980 census publications, it has been necessary to use 1970 census data and maps in the examples presented here. Nonetheless, publishing the booklet at this time is intended to take advantage of the heightened interest in 1980 census data during the 1981-1982 and 1982-1983 academic years resulting from each new series of data becoming available (see provisional schedule on p. xvi). In addition to providing familiarity with the 1970 and 1980 census data products, there were several other considerations that shaped the development of Projects for Students:

- Where possible, exercises were chosen that built upon ideas proven to be successful in the classroom
- Census-related skill development was essential so that students can better apply this knowledge in the classroom and in their chosen professions
- Compactness was important so that the exercises can be reproduced inexpensively

Projects for Students represents a new kind of publication for the College Curriculum Support Project. For the first time, census-related instructional materials have been solicited from instructors, repackaged, and made available for classroom use. The contributors whose ideas and exercises on decennial census topics made this volume possible are listed on page vi. All of their exercises were adapted to include 1980 information. Some, however, were merged because their contributions were similar; others were substantially modified in order to develop a more detailed treatment of the topic. Although we expect the primary use of this volume to be in college classrooms, many of these activities can serve as effective learning aids to other users of census data.

The volume is divided into two parts. The first provides an overview for instructors. Each exercise is described briefly with notations on the skills that the activity develops. Italicized notes draw the instructor's attention to special preparation or materials that may be needed (feel free to call the CCSP staff for additional assistance). The two charts that accompany this section aid in the decision whether to choose a particular exercise and in preparation for its subsequent use in the classroom. The first chart summarizes each activity's subject and skill orientation (p. xiv). The second (p. xv) specifies reports that need to be available for completion of the activity, as well as relevant supplemental resources. Since many of the desired 1980 census reports may not be published until late 1982, most examples were drawn from 1970 materials and include instructions that allow either 1970 or 1980 data to be used depending on availability. (For more information on the 1980 census publication program, see the 1980 Census Users' Guide (series PHC80-R-1) to be published beginning in fall 1981.)

The exercises are located in the second part and are organized according to six themes:

- Collecting the data
- Accessing the data
- The fieldwork interface
- Numerators and denominators
- Applications in the public sector
- Applications in the private sector

Within each exercise, an introduction (rationale) is presented; then comes the "problem" where the steps the students must follow are spelled out. In several exercises a section entitled "suggestions for further work" discusses additional activities to enhance the students' understanding of the 1980 census or other aspects of the Bureau's factfinding activities.

Copies of this publication are available for sale from the Government Printing Office, Washington, D.C. 20402, and quantities of 100 or more are subject to a 25% discount. Nonetheless, these materials are not covered by copyright restrictions, so any portion of the booklet can be reproduced in quantity.

We hope to publish additional exercises similar to those found in this volume. In them, we plan to incorporate more examples of 1980 census data and expand our focus to include more extensive treatment of the economic censuses and other Bureau publications. Most importantly, we wish to explore new instructional approaches and conceptual orientations. Thus, we are eager to receive comments on the exercises in Projects for Students, particularly on the following subjects: how well they worked in your classroom, how they could be improved, and what further work you suggest for inclusion. We would also appreciate your sending us any other classroom exercises or activities that illustrate the use of census data.

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* These exercises appear in much the same form as they did when submitted. The remaining ideas and exercises were modified or merged in accordance with the criteria mentioned on page iv.

An Overview for Instructors

Collecting the Data

This section explores some problems of conducting a census. Doing these two exercises should enable students to talk intelligently about some of the concepts and methodologies associated with reapportionment, to use the reapportionment-related resources that are in certain statistical compendia, to list the population and housing questions from the complete-count questionnaire, and to discuss some of the procedures used to enumerate college students.

1.1 Handling the Reapportionment Issue. Excerpts from an editorial are given to generate a discussion on the merits of using the number of citizens who vote in each State as a basis for apportioning the House of Representatives rather than employing the population counts that come from the decennial census. This exercise stresses critical thinking and essay writing. Suggestions are proposed for a comparison of the social and economic characteristics of persons who vote with the characteristics of the general population to determine what the impact of implementing such a Should voting totals be used as the appropriate should voting totals be used as the appropriate population figures when reapportioning political areas? Are there reasons, other than reapportionment, for having a census?

Although one may think that the reapportionment problem is resolved routinely every 10 years, this exercise raises a set of interesting questions with implications far beyond the realm of political science. Background reading is available in chapters 1 and 4 of CENSUS 80: Continuing the Factfinder Tradition. This activity offers opportunities to critique the editorial, to explore the calculations involved in the method of equal proportions, and to investigate this method's implications for selected age, race, ethnic, and regional groups with data from the Statistical Abstract (some of which are included) and from other statistical compendia.

1.2 Count Yourself In. Students fill out short-form questionnaires for hypothetical individuals. The questions that follow the activity generate classroom discussion on the conceptual and methodological problems that must be faced when taking a census. Problems associated with the enumeration of college students are presented for discussion as a suggestion for further work.

This exercise is self-contained and straightforward. Information regarding the content of the long-form questionnaire is located in chapter 9 of CENSUS 80: Continuing the Factfinder Tradition and in the 1980 Census Users' Guide. Additional copies of the 1980 questionnaire may be ordered from CCSP.

Accessing the Data

This section encourages students to locate data from a variety of sources and to assess systematically the resources available from the basic census collection. The exercises should enable them to evaluate the characteristics of statistical publications, to search more efficiently for alternate data sources within the local area, to gain cognizance of the range of data and of search procedures associated with statistical compendia, to construct a statistical table with due attention to its functions and components, and to understand selected census geography concepts.

2.1 Evaluating Census Data for States and SMSA's. Students become familiar with the characteristics of a selected census publication by completing a summary worksheet. Information is requested regarding the title, data collection procedures, the number of tables for selected geographic areas, and the limitations of the data included in the report; and students are asked to comment on tables and variables of interest. Doing this exercise should instill in students useful knowledge on the availability and the characteristics of census publications that contain data for their State and/or SMSA.

This activity promotes an understanding of the variety of information sources that are available for States and SMSA's. It emphasizes each publications' structure and contents rather than a search for a specific number. Whether students work individually or in groups, consideration should be given to photocopying the completed worksheets as a way of establishing a reference file of information sources on your area.

2.2 Cost Effectiveness of Data Search Methodologies. Students use one of seven sources (e.g., library, council of governments) to locate information on the changing population patterns within their city. The relative success of various search strategies is measured by evaluating the students' responses to three worksheets on which they account for time expended on the project, summarize and rank each source in the order of its importance, critique the search process, and give an estimate of the total search

cost. By completing this exercise, students discover that the process of finding information varies in cost, timeliness, content and geographic specificity, and frustration.

Because the assignment may not be appropriate for your area (e.g., no council of governments nearby, little interest in changing population dynamics), determine if the options and the problem should be modified. Students should be encouraged to follow the directions that are assigned to their group rather than to compare notes among groups while they are completing their phase of the exercise. Allow sufficient time for classroom discussion so that the students' reflections concerning the search process can be shared. Their focused critique of this process may lead to the design of a more structured search strategy when they next confront such a task.

2.3 Understanding Census Geography Concepts for the City. By doing this exercise, students deal with the differences among the terms urban, urbanized, and metropolitan. They discover that metropolitan areas vary significantly in their percentages of urban population. They locate the appropriate technical definitions in census publications, write their own interpretations of these concepts, and work with these concepts using the Asheville, N.C., SMSA as their test area. Completion of this exercise enables students 1) to distinguish more clearly among several terms (e.g., metropolitan, urban, urbanized, place, and city), 2) to use effectively the information that is presented on these technical terms and concepts in each census publication, and 3) to use the maps for urbanized areas and for subdivisions/townships and places that accompany 1970 PC(1)-A and PC80-1-A (number of innabitants).

This exercise emphasizes the importance of census geography concepts for the city and can help familiarize students with the contents of 1970 PC(1)-A or PC80-1-A reports. It is primarily self-contained; the exception is the technical terms on census geography that appear in decennial publications. If you want to update this activity, refer students to the information in the PC80-1-A report for North Carolina or modify the exercise to include an example for your own State.

2.4 Statistical Resources that Collect and Refer. The four activities of this exercise encourage the students' development of skills in the use of the Statistical Abstract, Historical Statistics, the County and City Data Book, and the State and Metropolitan Area Data Book.

(An Introduction to the Use of the Statistical Compendia). Step-by-step procedures facilitate familiarity with the proper use of statistical compendia (particularly with the Abstract). Completing this activity generates knowledge of the kinds and locations of informational resources that the Abstract offers. Also, students learn the steps to follow when using other statistical reports.

This activity is designed for independent study and is best conducted in the library unless copies are available in another location. Although it proposes three rather interesting uses of the Abstract (suggested by James Michener), the assignment can be changed to reflect the topical interests of the class.

(Reading a Statistical Table). Table reading skills are refined by completing three assignments: students review a list of steps pertinent to reading a table and identify the elements of a statistical table; they construct a table according to specific instructions; and they redesign the table so as to experiment with different table formats.

Although this activity is self-contained, a more recent edition of the Abstract may allow students to focus their attention on information from the 1960 and 1980 censuses rather than the 1950 and 1970 censuses. Some may need additional instruction to understand why the information in figure 3 does not answer the question that the activity poses, and others may need more detailed instructions on the construction of the table.

(The Collecting Function). Students select one of two topics provided or one of their own choosing and locate statistical information that is available on that topic. A worksheet encourages an organized summary of their findings. This activity induces familiarity with each volume's contents and the geographic levels that it presents. Students also learn that certain terms in everyday use (e.g., family) have highly specific meanings when used in statistical reports, and that these meanings may differ significantly from the students' intuitive interpretation. The importance of using the definitions found in the text of the reports is stressed.

This activity emphasizes the points that are made in table 1 (p. 15): the amount of detail that is available within a compendium is a function of decisions about what is most important to stress. The County and City Area Data Book and the State and Metropolitan Area Data Book can present information for several types of small areas because time series data are not frequently presented. Similarly, the Statistical Abstract and Historical Statistics can provide detailed time series data and cross-tabulations since they give little information below the national level. The students should plan to complete this activity in the library because all four volumes are needed. Some reasonable variations on the instructions are:

- *Assign students to separate volumes so that their combined efforts provide the synthesis that this activity offers*
- *Assign a topic that is more closely aligned to the interests of the class. If this option is chosen, develop a topic that will require information for your State, county, or SMSA as well as information at the national level*

(The Referral Function). Students develop a bibliography for the topic identified in the previous activity. The instructions aid students in using the compendia as sources for references to other statistical publications by illustrating the various ways that the compendia lead a person back to the primary source. The students start their search in the Abstract (the source for the illustrations) and continue it in the other compendia. After completing this activity, students should be able to use this referral function to complete a bibliographic search through the compendia with minimal effort. A worksheet helps the students systematically organize their bibliography.

This activity can be completed with reference to one or all of the compendia resources. Whatever option is chosen, the principal point is that these volumes are especially useful because such detailed referral information is present. In addition, the activity reinforces the idea that the information in the headnotes and footnotes may be as important as the numbers in the field.

The Fieldwork Interface

Information derived from observations while traveling through a study area may seem quite different from that found for the same area in a statistical table. Such discrepancies may result from the students' skills of observation not being properly developed, from difficulty in quantifying the field observation, from the study area having changed distinctly since the statistical data were collected, or from statistics not being available on all of the significant social or physical characteristics of a community. Doing these exercises should aid students in bridging this methodological gap. Because they emphasize census tract data, they are primarily useful in courses that stress urban topics.

3.1 Census Tract Analysis. Students make field observations of a neighborhood and compare their findings with statistical information as found in a census tract report. In both cases, they determine or estimate whether the variables listed on the worksheet are above or below the average for the county in which the tract is located. In the suggestions for further work, students examine changes in tract boundaries between 1970 and 1980 and consider population dynamics that may have been responsible for the changes. Becoming familiar with the contents of the census tract reports, reading census tract maps, finding tabular information for split and divided tracts, and developing an ability to relate field observations with statistical information that appears in census publications are skills that this exercise stresses.

This exercise combines two activities that were submitted by different instructors. The first (option A) directs students to go to the field before they consult the census tract report, and the other (option B) takes the reverse approach. Before this exercise is assigned, decide which option should be used (the worksheet is appropriate for both options) and whether the students will select the census tracts 1) from a list of tracts that you provide or 2) without your input. If the selected tract is located entirely within a city shown in the tract report, the comparisons can be made with the city rather than with the county (column D of the worksheet).

3.2 Windshield Stratification Survey. Students select two field-trip routes that start in the central business district (CBD) and proceed to the periphery of the urbanized area in opposite directions. On the worksheet, they record both the distance from the CBD and the values for two census variables for each tract they plan to traverse. Once they are in the field, students record two direct observation variables for each tract. Performing this analysis helps students 1) relate the information collected through direct observation with its equivalent summary statistic for a number of divergent tracts, 2) understand that some characteristics observed in the field or summarized in a census publication are correlated with the distance of the tract from the CBD, and 3) realize that some of these characteristics that are observed in the field are not tabulated in census publications, and vice versa.

Instructors who teach courses that consider human or urban ecology should find this activity useful; others may appreciate its promotion of the interrelationships discernable when one combines field observations with searches for quantitative information in census volumes. Local street and tract outline maps should be made available so that students can plan their routes with minimal frustration and ambiguity.

3.3 Perspectives on Poverty. After the range of poverty-related variables has been identified, students choose a census tract that they believe to have a high incidence of poverty. During their field study they observe the tract's physical characteristics and map the location of its features. They are introduced to poverty status as a derived variable and to the ratio of family income to poverty level in the suggestions for further work. By completing this activity, students learn 1) that several variables that appear in the census publications are relevant to the identification of poverty areas, 2) which of the direct observation variables aid in locating such poverty areas, and 3) that the measurement of poverty frequently requires the combination of two or more variables into an index.

The basic exercise requires field observation and the exploration of the variety of census variables that are related to the measurement of poverty. On the other hand, poverty status as a derived variable is analyzed without fieldwork in the suggestions for further work. The "weighted average thresholds at the poverty level in 1969" (see table A) should be replaced by its 1979 counterpart when the 1980 tract reports are published. If the students have not worked with the development of noncumulative and cumulative graphs, additional instructions will be needed when the worksheet is assigned.

Numerators and Denominators

The Census Bureau: A Numerator and Denominator for Measuring Change is the title of a technical paper that highlights the proceedings of a symposium involving Bureau officials and UCLA graduate students. This section borrows this theme to present a number of measures that can be used to manipulate variables into a more meaningful form. Most of these measures are founded on demographic concepts.

4.1 Measures of Population Growth. This exercise introduces four measures of population growth through the preparation of a press release to highlight the characteristics of population growth between 1970 and 1980 in the Washington, D.C., SMSA. The class is divided into four groups, each develops a press release based on the measure of population growth assigned to it. Once the releases are presented to the class, the groups complete a worksheet that increases their proficiency with the use of each measure. Then, using 1980 census data from their own area, they create a new press release to demonstrate their ability to incorporate the four measures into a coherent narrative text with graphics. Suggested further work indicates opportunities to collect press releases from local papers and the Census Bureau and then to prepare two press releases--one on housing growth (or decline) and another that uses census geography categories (e.g., urban, central city, urban fringe) instead of political unit names as the unit of analysis.

Surprise is a key element for inclusion in this activity. Present each group with one of the four tables (located on page 33) and with the instructions given in step one. Stress that they limit their analysis to the information included in their table. The answers to the calculations that are required for step two (worksheet 1) can be reconstructed from the figures given in the four tables. Each of the suggestions for further work should be examined to determine if it is appropriate for use as an additional work assignment.

4.2 Some Basic Demographic Measures. Eleven worksheets promote an understanding of the use of age and sex measures. Students are introduced to the sex-ratio concept and complete four worksheets that display the variations in this statistic by race, age groups, geographic areas, and socioeconomic characteristics. Measures of the age structure (i.e., median age, percent distribution, percentage of change, age specific indexes, and the age dependency ratio are presented in the next section. The five accompanying worksheets allow students to post, calculate, and display these measures. The final section contains instructions on how to develop an age/sex pyramid. The pertinent worksheets facilitate the calculation of the percentages and the construction of the pyramid. Students integrate their newly-acquired skills by estimating the sex ratio, median age, and dependency ratios using the information contained in age/sex pyramids for two rather divergent populations (Citrus County, Florida, and Bullitt County, Kentucky).

The tables that allow use of either 1970 or 1980 census information from U.S. summary statistics or State-level data are cited in table 1. Several of the worksheets and activities are self-contained because excerpts from tables 52 and 53 of the 1970 U.S. summary (see table 1) and population counts by age, race, and sex for 1980 (page 39) are included. If you intend to modify this activity with the use of census tract data, adjustments will be needed for worksheets 10 and 11 because the age groupings for tracts are less detailed than those available in the State reports. Shryock and Siegel's Methods and Materials of Demography (chapters 6 and 7) or chapter 7 of CENSUS 80: Continuing the Factfinder Tradition should be consulted if more detailed information on these demographic measures is needed.

4.3 Using the Location Quotient to Compare Data. The location quotient is presented as a mechanism for examining relative economic activity within an area. Having a scale on which 1.0 represents the norm, the quotient serves as a measure of intensity. The example of beer brewing within Milwaukee County, Wisconsin, illustrates the importance of employment classification and geographic level when this measure is used. The worksheet serves a two-fold purpose: as a place to post data and to record calculations needed for investigating the intensity of employment within several counties; and as a supplement to the suggestions for further work, where the County Business Patterns (CBP) is employed in investigating the same problem. Students should perceive that the CBP is more current, comes from a different type of data base, frequently offers more detail, and classifies employees by place of employment rather than by place of residence (as in the decennial census). Doing this activity enables students to use the location quotient for different geographic levels (e.g., county, SMSA), to appreciate the importance of subject and geographic specificity to this concept, and to determine whether their question is best answered by using decennial or CBP employment data.

The location quotient is one of several statistics that employs two percentages. For instance, in exercise 4.1, the index of population growth is used to compare the rate of change within one area to that of a larger area. The ideas offered in the suggestions for further work are especially useful in making students aware of other relevant data bases. The answers to exercise questions 5 and 6 require a reading of "Reliability of Data" in the front matter of County Business Patterns in conjunction with appendix C of 1970 PC[1] ["Accuracy of the Data"). Unlike decennial census data, County Business Patterns data are tabulated from files representing all elements in the "universe" and are, therefore, not subject to sampling errors. Examples of nonsampling errors both data sets share are the following: inability to obtain information about all cases in the universe; and errors in recording or coding the data obtained.

Applications in the Public Sector

Census and survey data are used by governments, businesses, and public interest groups to determine their respective courses of action. This section touches on such purposes as community planning, shaping organizational strategy, creating funding formulas, and developing systems for political representation. Doing these exercises should allow students to acquire several insights: how block data can be used to build a target area for analysis of a community project; how data from highly divergent sources (i.e., census and public opinion) and representing different geographic levels (i.e., local and national) can be merged to attempt the solution of a community problem; how census data can be employed to target areas of need (i.e., poverty areas); and how a ward system can be constructed to give political representation to racial and ethnic constituencies.

5.1 Using Block Data to Plan Community Action. Students examine housing and population characteristics for a target area defined in terms of a combination of census blocks. Using the first worksheet, they record the values for the "important" variables and calculate the totals, means, and percentages. They then compare the area's characteristics with those of the central city using worksheet 2 and a followup report. Further work is suggested on the issue of comparability between 1970 and 1980 block statistics. Problems are discussed. Completing this activity fosters certain skills: 1) how to use census blocks as building blocks; and 2) how to compute statistics comparable to those available in other census volumes (i.e., higher levels of census geography). In addition, students are able to discuss more intelligently the differences in content between 1970 and 1980 block statistics.

Before this activity is assigned, choose a target area that does not coincide with a census tract or any other census geographic unit and outline the area on a city map so that students will gain experience in the transfer of information to census block maps. If you plan to use 1980 census block statistics (available winter-spring 1982), note that the data tables are published only on microfiche although the maps are in print. Your library may be able to make full-sized prints of the required frames for use by the class. Some students may find that a statistic cannot be calculated on their worksheet because data for selected blocks are withheld (suppressed). Suppression procedures are required by law in order to protect the confidentiality promised respondents. The inconvenience that students may experience can be lessened if they read the general principles and user notes on suppression for the 1970 block statistics program that are found on pages 92-94 of the Reference Manual on the Population and Housing Statistics from the Census Bureau (a desk copy is available from CCSP). The 1980 Census Users' Guide includes comparable information for the 1980 block statistics program. Chapters 5 and 11 of CENSUS '80: Continuing the Factfinder Tradition give further facts on blocks and community planning.

5.2 Combining Census and Public Opinion Data to Solve Community Problems. Students examine the findings from a national conservation study and merge these data with county census data to solve a local problem. They obtain maps of relevant counties and places, analyze demographic trends, categorize places and population segments in regard to their position on conservation, and recommend strategies on organizational outreach. By doing this exercise students begin to realize: 1) that the only available information may be neither timely (e.g., 1969 or 1970) nor at the appropriate geographic level (e.g., national versus county); 2) that these data must be used with caution; and 3) that opinions that vary by sex, age, education, income, and geographic location may be related to the same categories of information in the census publications. They may also discover creative ways of applying these data to the local problem.

Students should be cautioned against simply applying national rates to local populations, especially on issues where opinion is known to vary considerably by area. Still, they should recognize that demographic characteristics help predict or explain local feelings. For a further look at how socioeconomic and opinion data are used side-by-side, refer to Social Indicators III. It discusses the quality of life and has data on public perceptions.

5.3 Allocating State Money for Poverty Areas. Students make recommendations for the allocation of money for counties within the State. Although initial criteria are given, they must select six counties that are among those with the greatest

need by taking into account several factors. As part of their justification, they must calculate a set of indices, provide graphic presentations, and justify their selection in a written report. Completing this exercise should increase students' awareness of the complexities of the targeting process. Another skill that is refined is one's ability to choose, whether the differentiation is among counties, variables, programs to fund, or population groups to target. Caveats relevant to such analysis emerge.

Decide whether students should work on this exercise individually or in groups. Knowledge of how to calculate quantities in frequency distributions is required. Also, students must understand methods of graphic presentation (e.g., figures, pie charts, and bar graphs). For further information on the importance of selected variables in the distribution of Federal funds, refer to chapter 3 of CENSUS 80: Continuing the Factfinder Tradition or "Distributing Federal Funds: The Use of Statistical Data" by D. Emery, V. Campbell, and S. Freeman in Statistical Reporter 81 (3) (December 1980): 73-80.

5.4 Wards for Abbeyville. This lengthy, self-contained exercise uses precinct data from the hypothetical city of Abbeyville, Texas, to provide experience regarding the complexity of developing a single-member district (ward) system to replace an at-large system for electing representatives to the city council. Tables, maps, and excerpts from other documents offer information to supplement the frequent "feedback" in carrying out the instructions. The activity is broken into 10 sessions. It is organized into the following steps: introduce the problem and state the goal; redefine the problem; gather information; identify facts, assumptions, and constraints; organize the data; generate possible solutions and evaluate them; and make a final decision. Students follow the city officials' process step by step and then do work relating to the particular activity described. Completing this case study should develop several skills: what P.L. 94-171 data are and why they are so important for redistricting and other uses where a precinct-level data base is needed; how political representation of interest groups (and hence equal representation) is employed as a factor in ward formation; how much importance should be placed on precise terminology when considering issues of race and ethnicity (e.g., the race of Hispanic people).

"Wards for Abbeyville" merges a guided design approach with the special population data base that was prepared by the Census Bureau in accordance with Public Law 94-171. This file, providing counts for total population, major race groups, and persons of Spanish/Hispanic origin, served as the basis of the redistricting efforts that followed the release of the 1980 population counts. The use of the P.L. 94-171 file in this exercise is illustrative of its use in other areas. Given the importance of equal representation for persons of various racial and ethnic origins, the exercise may serve as the catalyst for a more detailed discussion on this topic.

The special readings included in the exercise will help students realize that in some cases the use of ethnic and racial data in the manner they were employed in the Abbeyville example creates problems of overlap (p.71). For example, Haitians are generally both Black and of Spanish origin. Students may be divided into groups for the duration of the exercise so that student interaction is enhanced. Homework weightings (see pp. 71 and 74) will need to be determined before the exercise is assigned. Redistricting issues are discussed further in CENSUS '80: Continuing the Factfinder Tradition on pp. 120-128.

Applications in the Private Sector

The exercises in this section enhance the development of skills in two of the problem areas that businesses face when they use census data. In the first, the problem of selecting the most appropriate set of variables when targeting an investment or marketing program is addressed; in the second, the geographic aspects of targeting programs (i.e., defining trading areas) is considered. In a sense, both exercises help students work with surrogates (variables and geographic areas that only approximate the desired concepts). This skill is equally important in the public sector.

6.1 Identifying the Market: The Use of Surrogates. Students assume the role of an entrepreneur who wishes to locate a new hardware store to cater to the needs of "do-it-yourselfer" homeowners. The assignment leads the students through the process of developing assumptions and identifying surrogate measures that are available in census publications. Information is provided to help students investigate the advantages and disadvantages of alternate measures and to explore the number of options that the census provides. This activity offers skill development in problem identification, in the creative use of census data to meet a marketing objective, and in critical evaluation of selected measures that the census publications offer as surrogates.

This exercise uses examples from the census tract table outlines although it is equally useful if other 1970 or 1980 census publications are the resources. Students should be encouraged to exhibit their creative abilities tempered with caution when they develop the assumptions and match these to the options that census publications allow. If the optional activity (see figure 4) is assigned, review American Demographics for

issues that have featured examples of businesses incorporating lifestyle research into their marketing program.

6.2 Trading Areas: Assumptions and Reality. Students acquire understanding of the trading area concept by doing three activities. In the first, they investigate the assumptions that are used to delineate a trading area; they do so by answering a series of questions regarding a set of hypothetical trading areas. The size and shape of the areas are influenced by distance from consumers their willingness to travel to larger or more attractive retail centers than those closer to them, physical barriers to access, and their choice whether to shop at more than one center. Students are presented with two base maps: one showing the location of a retail center and the other showing the boundaries for small areas for which census data are available. This information is used to determine which operational definitions to employ in estimating the size of the trading area. The first set of illustrations stresses the assumptions; the second set, the methodology. The second activity leads students step by step toward an understanding of the skills needed to read a census tract outline map and a major retail center map. Finally, a synthesis of the first two activities is provided in activity three. In it, students are divided into groups and are assigned one of six options for determining the size of a trading area. In the process, they work with the population totals at the tract level and the size characteristics of the major retail centers to estimate the population totals of the trading areas. These estimates are compared with those of the other groups. A discussion of the advantages and disadvantages of each option is encouraged. Completing this activity enables students to critique the trading area concept, to use the maps available for census tracts and major retail centers, and to estimate the size and shape of a trading area.

This self-contained exercise presents both theory and practice so that students will better understand the assumptions that go into the designation of a trading area. For individuals who have not worked with such abstract drawings as those that appear in activity 1, the following hints may facilitate their comprehension of the point of each illustration:

Figure 3. The two trading areas are larger than those that appear in figure 2. Customers located in the areas of overlap may shop at either center.

Figure 4. The same assumptions apply here as for figure 2; however, a larger retail center can attract customers from a much greater area. Customers who are within both the large and small trading areas shop at either the local center or the regional center depending on the type of merchandise sought.

Figure 5. Two retail centers that have unequal drawing power attract customers who are influenced by the size of the retail center. They consistently make the choice to shop at one center rather than the other.

Figure 6. A river serves as a barrier to travel and thus limits the trading areas of both centers.

Figure 7. Although individuals from most areas shop at the nearest center, those in some neighborhoods (e.g., defined by ethnic or income characteristics) shop at retail centers catering more to their ethnic or income group.

Figure 8. An elliptical trading area is created because the highway permits greater accessibility for individuals who are located along its route.

Figure 9. This represents a major retail center map on which the locations of the major retail center and the highway are shown.

Figure 10. This represents a census tract outline map.

Figure 11. Individuals who live in the same tract(s) as the retail center are counted.

Figure 12. In addition to the conditions noted in figure 11, the remaining areas are considered as secondary with the result that the population living in the primary area is assigned a greater weight than that attributed to inhabitants of the secondary area.

Figure 13. Tracts that are either in or contiguous to those in which the retail center is located are included in the trading area.

As noted on page 82, figures 14-16 are based upon the assumption that the trading area has an elliptical shape (i.e., is related to the accessibility provided by a highway).

Figure 14. All of the tracts that are completely within the trading area are counted.

Figure 15. All of the tracts that are within or touch the trading area boundary are counted in the population total.

Figure 16. This population total was calculated as it was in figure 14 with one exception: population figures for the tracts that straddle the boundary line are estimated by interpolation (e.g., by multiplying the percentage of the land area that was within the tract by the total population of the tract).

EXERCISE CHARACTERISTICS

Exercise Name	Orientation: Subject: Geographic Structure	Orientation: Subject: Population	Orientation: Subject: Housing	Orientation: Subject: Economic	Orientation: Use: Public Sector	Orientation: Use: Private Sector	Orientation: Use: Academic	Skills: Understanding Concepts	Skills: Map Reading	Skills: Table Reading	Skills: Data Manipulation	Skills: Data Evaluation	Skills: Surrogate Measure Identification	Census Geography Level: Nation	Census Geography Level: State	Census Geography Level: SMSA	Census Geography Level: County	Census Geography Level: Place	Census Geography Level: Census Tract	Census Geography Level: Block	Miscellaneous: Group Work	Miscellaneous: Total Pages (N=)	Miscellaneous: Worksheets (N=)	Miscellaneous: Sessions or Activities	Miscellaneous: Suggestions for Further Work
Collecting the Data																									
1.1 Reapportionment		X			X		X	X						X	X							2		1	0
1.2 Count Yourself In		X	X					X														4	2	1	0
Accessing the Data																									
2.1 Evaluating Census Data		X	X	X				X		X		X			X	X					X	2	1	1	
2.2 Evaluating Data Search Methodologies		X	X			X						X	X			X	X	X			X	4	3	1	
2.3 Census Geography Concepts	X	X					X	X		X					X	X	X	X				2		1	
2.4 Statistical Resources	X	X	X	X			X	X			X	X	X	X	X	X	X	X				9	2	4	
The Fieldwork Interface																									
3.1 Census Tract Analysis	X	X	X				X			X		X	X				X		X			3	1	1	
3.2 Windshield Stratification		X	X				X			X		X	X						X			2	1	1	
3.3 Perspectives on Poverty		X					X	X		X		X	X						X			2	1	1	0
Numerators and Denominators																									
4.1 Measures of Population Growth	0	X	X				X	X		X		X			0	X	X				X	6	2	2	0
4.2 Some Basic Demographic Measures		X					X	X				X		X	X	X	X					16	11	3	
4.3 Location Quotient		X	X	X		X		X		0	X				X	X	X					4	1	1	0
Applications in the Public Sector																									
5.1 Using Block Data	X	X	X					X	X	X								X	X			4	2	1	0
5.2 Combining Census and Public Opinion Data		X			X	X																2		1	
5.3 Allocating State Money		X			X										X		X					1		1	
5.4 Wards for Abbeyville		X			X			X	X	X	X	X	X				X				X	11	1	10	
Applications in the Private Sector																									
6.1 Surrogate Measures		X			0	X		X		X		X	X				X	X				4	1	1	0
6.2 Trading Areas	X	X		X	0	X	X	X	X		X		X			X		X			X	9		3	

X - Primary focus
0 - Optional activity

RESOURCE REQUIREMENTS

Exercise Name	Self-contained	Decennial Census		Economic Programs	Statistical Compendia 1/				Local Sources Needed
		1980	1970 (Use the 1980 census if possible)		SA	HS	CCDB	SMADB	
Collecting the Data									
1.1 Reapportionment	Yes				o		o		
1.2 Count Yourself In	Yes								
Accessing the Data									
2.1 Evaluating Census Data		See p.8	See p.8	See p.8					
2.2 Evaluating Data Search Methodologies		Student option	Student option				o	o	Yes
2.3 Census Geography Concepts	Part	o-(PHC80-3, PC80-1, or HC80-1)	o-(1970 PC(1) or 1970 HC(1))		o	o	x	o	
2.4 Statistical Resources	Part				x	o	o	o	
The Fieldwork Interface									
3.1 Census Tract Analysis		PHC80-2	1970 PHC(1)						Yes
3.2 Windshield Stratification		PHC80-2	1970 PHC(1)						Yes
3.3 Perspectives on Poverty		PHC80-2	1970 PHC(1)						Yes
Numerators and Denominators									
4.1 Measures of Population Growth	Yes	o-(PC80-1-A)	o-(1970 PC(1)-A)						
4.2 Some Basic Demographic Measures	Part	See p.38	See p.38						
4.3 Location Quotient		PC80-1-C	1970 PC(1)-C	o-(CBP-current)					
Applications in the Public Sector									
5.1 Using Block Data		PHC80-1	1970 HC(1)						Yes
5.2 Combining Census and Public Opinion Data.		PC80-1-B,C	1970 PC(1)-B,C						
5.3 Allocating State Money		PC80-1-B,C o-(P-25, No. 701)	1970 PC(1)-B,C o-(P-25, No. 701)						
5.4 Wards for Abbeyville	Yes	o-(PL94-171)							
Applications in the Private Sector									
6.1 Surrogate Measures		PHC80-2 or (PC80-1 and HC80-1)	1970 PHC(1) or (1970 PC(1) and 1970 HC(1))						
6.2 Trading Areas	Yes	o-(PHC80-1)	o-(1970 PHC(1))	o-(MRC77)					

x - Required
o - Optional

1/ SA - Statistical Abstract
HS - Historical Statistics
CCDB - County and City Data Book
SMADB - State and Metropolitan Area Data Book

Provisional Product Release Schedule

PRINTED AND MICROFICHE DATA PRODUCTS:

P.L. 94-171	Public Law 94-171 Population Counts	Released
PHC80-V	Final Population and Housing Unit Counts	Released
PHC80-1	Block Statistics 2/	11/81-4/82
PHC80-2	Census Tracts 2/	6/82-1/83
PHC80-3	Summary Characteristics for Governmental Units and SMSA's	1/82-7/82
PC80-1-A	Number of Inhabitants	9/81-12/81
PC80-1-B	General Population Characteristics	10/81-3/82
PC80-1-C	General Social and Economic Characteristics	6/82-12/82
PC80-1-D	Detailed Population Characteristics 2/	1/83-9/83
HC80-1-A	General Housing Characteristics	10/81-3/82
HC80-1-B	Detailed Housing Characteristics	6/82-12/82
HC80-2	Metropolitan Housing Characteristics 2/	1/83-10/83

SUMMARY TAPE FILES (STF's):

STF 1A	8/81-12/81
STF 1B	11/81-3/82
STF 2	10/81-3/82
STF 3	1/82-7/82
STF 4	6/82-12/82
STF 5	1/83-9/83

OTHER DATA PRODUCTS:

Public-Use Microdata Samples	late 1982-early 1983
Early National Sample Report	early 1982

(Preliminary estimates of most sample characteristics will be prepared on the basis of a small sample for the Nation, States, and the 38 SMSA's with 1 million or more inhabitants and published as a single document well ahead of final sample reports with greater area detail.)

REFERENCE MATERIALS:

PHC80-R-1	1980 Census Users' Guide	fall 1981
PHC80-R-2	History of the 1980 Census of Population and Housing	fall 1983
PHC80-R-5	Geographic Identification Code Scheme	1982

1/ This revised schedule was disseminated in May 1981.

2/ Currently scheduled for release on microfiche only.

CENSUS '80: Projects for Students

(exercise list)

COLLECTING THE DATA

1.1 Handling the Reapportionment Issue.....2
1.2 Count Yourself In.....4

ACCESSING THE DATA

2.1 Evaluating Census Data for States and SMSA's.....8
2.2 Cost-Effectiveness of Data Search Methodologies.....10
2.3 Understanding Census Geography Concepts for the City.....14
2.4 Statistical Resources that Collect and Refer.....16

THE FIELDWORK INTERFACE

3.1 Census Tract Analysis.....25
3.2 Windshield Stratification Survey.....28
3.3 Perspectives on Poverty.....30

NUMERATORS AND DENOMINATORS

4.1 Measures of Population Growth.....32
4.2 Some Basic Demographic Measures.....38
4.3 Using the Location Quotient to Compare Data.....54

APPLICATIONS IN THE PUBLIC SECTOR

5.1 Using Block Data to Plan Community Action.....58
5.2 Combining Census and Public Opinion Data to Solve Community Problems.....62
5.3 Allocating State Money for Poverty Areas.....64
5.4 Wards for Abbeyville.....65

APPLICATIONS IN THE PRIVATE SECTOR

6.1 Identifying the Market: The Use of Surrogates.....76
6.2 Trading Areas: Assumptions and Reality.....80

Handling the Reapportionment Issue

Our present method of apportioning the House of Representatives makes it important to count every resident so as to insure equal representation. This exercise examines an alternate method.

PROBLEM: The United States Constitution of 1787 states that:

> Representatives...shall be apportioned among the several States which may be included within this Union, according to their respective numbers...

Although the Constitution also mandated a census every 10 years to serve as a basis for reapportionment, the following editorial proposes a system that is much simpler.

1. Read the editorial. Do you agree or disagree with the author's viewpoint?

2. Write an essay discussing the author's proposal, the advantages and disadvantages of his method of reapportionment, and your position on this matter. Consider the following questions in your essay:

- What groups of people would be counted with this method?
- What groups of people would not be counted under this approach?
- How would funds for Federal programs be given out fairly?
- How would local governments plan schools, parks, hospitals, and other services without a complete census?

3. Suppose someone suggested taking a census of the United States population using the income tax returns that are sent in to the Internal Revenue Service each year. Discuss as a class how you would respond to that suggestion and why you would or would not be in favor of it.

Why not do away with the census, use voting for reapportionment?

By HARRY BODINE
of The Oregonian staff

AS LONG as the drive is on for a second constitutional convention to force a balanced federal budget, the delegates might consider saving a billion dollars by eliminating one paragraph in the present document.

Article I, Section 2 requires a population census every 10 years in order to reapportion the U.S. House of Representatives.

One possibility would be to amend Article I, Section 2 to base U.S. House of Representatives membership on the number of votes cast rather than on voters and non-voters alike.

Mechanically, reapportionment could be much simpler. Thirty days after a presidential election – a good guide to use since it is uniform in all 50 states and attracts the largest portion of the electorate – the vote count would be known at the precinct level nationwide.

With an election every four years, reapportionment could follow each presidential election, taking effect at midterm two years later, thus making the House of Representatives more current in reflecting population shifts than is the case at present.

If congressional representation was based on voter turnout, every state would have a strong incentive to encourage people to go to the polls.

Failure to do so could be painful politically. In 1976, for example, the presidential election turnout in California slipped 500,000 below the 1972 total. With a voter-based reapportionment, the state's House delegation would have declined from 47 after the 1972 election to 42 after 1976. (California currently has 43 U.S. House members).

Historically, the poor and minority groups have provided poorer voting performances than the public at large.

Recent studies, however, indicate voter apathy crosses all income groups, and the proportion of non-participation among affluent voters is rising steadily, a theme detailed in Arthur T. Hadley's recent book, "The Empty Polling Booth."

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SUGGESTIONS FOR FURTHER WORK

1. Bodine's proposal raises several intriguing questions that cannot be answered without reference to statistical resources. As examples:

- Which States, because of their large proportions of citizens who are currently too young to vote, would be penalized if this proposal were implemented?
- Assuming that some of the same socioeconomic characteristics (educational level, age, and race/ethnicity) of voters and nonvoters would prevail even under this proposal, which groups' representation would be diluted?
- Bodine claims that every State would, under his system, have a strong incentive to turn out at the polls. What are the geographic trends in voter participation?
- What are the implications of this proposal in terms of regional shifts of power (i.e., changes in the number of seats apportioned per State)? Differentiate between changing demographics (e.g., age structure, migration) and voter participation as factors in such power shifts.

Provide answers to these questions by using the Statistical Abstract, an annual compendium that contains over 1,500 tables of statistical data. The following tables from the 1980 edition provide useful information:

No. 852. Estimated Resident Population of Voting Age--States: 1960 to 1980

No. 853. Percent of Voting-Age Population Casting Votes--States: 1960 to 1980

No. 856. Voting-Age Population, and Percent Reporting Registered and Voted: 1968 to 1978 (see below)

No. 857. Participation in National Elections, 1964 to 1978, and by Population Characteristics, 1978

One can even find information in the Statistical Abstract to determine the implications of the proposal to use tax returns as a surrogate for apportionment purposes (see table no. 456. Federal Individual Income Tax Returns and Taxes--States and Other Areas: 1970-1978). Compare voting-age population counts to the number of tax returns for a few States to see if any regional differentials exist.

2. Investigate the demographic and voting patterns on a different geographic level (e.g., county, city, and SMSA) by using the County and City Data Book, 1977 or the State and Metropolitan Area Data Book, 1979.

3. Congressional seats are apportioned to States according to the method of equal proportions. To determine a State's claim for each new seat, the apportionment population of each State is multiplied by the decimal of the fraction that is given as

$$\frac{1}{\sqrt{N(N-1)}}$$

where "n" is the number of the seats for the State. The result of this multiplication is a number called a priority value. If you are skilled in computer programming, determine the number of seats that would be awarded to each State in 1980 if Bodine's proposal was implemented (see CENSUS '80: Continuing the Factfinder Tradition, pp. 114-119). Use table 828 in the 1980 Statistical Abstract to determine the total number of votes cast for President in 1980.

No. 856. VOTING-AGE POPULATION, AND PERCENT REPORTING REGISTERED AND VOTED: 1968 TO 1978

[See headnote, table 857]

CHARACTERISTIC	VOTING-AGE POPULATION (mil.)					PERCENT REPORTING THEY REGISTERED					PERCENT REPORTING THEY VOTED				
	1968	1972	1974	1976	1978	1968	1972	1974	1976	1978	1968	1972	1974	1976	1978
Total	116.5	136.2	141.3	146.5	151.8	74.3	72.3	62.2	66.7	62.6	67.8	63.0	44.7	59.2	45.9
White	104.5	121.2	125.1	129.3	133.4	75.4	73.4	63.5	68.3	63.8	69.1	64.5	46.3	60.9	47.3
Black	10.9	13.5	14.2	14.9	15.6	66.2	65.5	54.9	59.5	57.1	57.6	52.1	33.8	48.7	37.2
Spanish origin [1]	(NA)	5.6	6.1	6.6	6.8	(NA)	44.4	34.9	37.8	32.9	(NA)	37.4	22.9	31.8	23.5
Male	54.5	63.8	66.4	69.0	71.5	76.0	73.1	62.8	67.1	62.6	69.8	64.1	46.2	59.6	46.6
Female	62.1	72.4	74.9	77.6	80.2	72.8	71.6	61.7	66.4	62.5	66.0	62.0	43.4	58.8	45.3
North and West [2]	81.8	93.7	96.5	99.4	102.9	76.5	73.9	63.3	67.7	63.8	71.0	66.4	48.8	61.2	48.9
South [2]	34.9	42.6	44.8	47.1	48.8	69.2	68.7	59.8	64.6	60.1	60.9	55.4	36.0	54.9	39.6
Metropolitan [3]	75.8	99.2	101.3	99.6	103.1	73.4	72.5	61.2	65.7	61.3	68.0	64.3	44.7	59.2	46.0
In central cities	35.6	42.4	43.9	43.1	43.7	71.5	70.9	59.5	63.3	59.2	65.6	62.2	42.6	56.8	44.2
Outside central cities	40.1	56.9	57.4	56.5	59.4	75.0	73.8	62.6	67.6	62.8	70.1	65.9	46.3	61.2	47.4
Nonmetropolitan	40.8	37.0	40.0	47.0	48.6	78.0	71.7	64.7	68.8	65.3	67.3	59.4	44.7	59.1	45.6
18-20 yr	4	11.0	11.6	12.1	12.2	44.2	58.1	36.4	47.1	34.7	33.3	48.3	20.8	38.0	20.1
21-24 yr	11.2	13.6	14.1	14.8	15.5	58.4	59.5	45.3	54.8	45.1	51.1	50.7	26.4	45.6	26.2
25-44 yr	48.1	49.1	51.7	54.3	57.5	72.4	71.3	59.9	65.5	60.2	66.6	62.7	42.2	58.7	43.1
45-64 yr	40.4	42.3	43.0	43.3	43.4	81.1	79.7	73.8	75.5	74.3	74.9	70.8	58.9	68.7	58.5
65 yr and over	18.5	20.1	21.0	22.0	23.0	75.6	75.6	70.2	71.4	72.8	65.8	63.5	51.4	62.2	55.9
Employed	70.0	80.2	83.1	86.0	93.2	76.6	74.3	63.8	68.8	63.0	71.1	66.0	46.8	62.0	46.7
Unemployed	1.9	3.7	5.0	6.4	4.9	60.3	58.7	44.4	52.1	44.1	52.1	49.9	28.8	43.7	27.4
Not in labor force	44.7	52.3	53.2	54.1	53.5	71.3	70.3	61.3	65.2	63.4	63.2	59.3	43.0	56.5	46.2

NA Not available [1] Persons of Spanish origin may be of any race. [2] See fig. I, inside front cover [3] Standard metropolitan statistical areas as defined in 1960 census publications for 1968 and in 1970 census publications for 1972-1978

Source: U.S. Bureau of the Census, *Current Population Reports*, series P-20, No. 344 and earlier reports

Count Yourself In

The numbers that appear in the printed reports or on computer tape originated, of course, from the responses placed on the decennial census questionnaire by millions of individuals. This exercise provides an opportunity to become more familiar with the questions that were asked of everyone (i.e., on the short form questionnaire or in the complete-count part of the long form questionnaire).

PROBLEM: Imagine that you are one of the people listed below. Fill out the 1980 census questionnaire as you think the persons that you have chosen would. Feel free to make up any information you need to complete the questionnaire, but remain consistent with your role. (For example, an elderly, widowed man who rents a one-room apartment probably does not pay a monthly rent of $500 or more.) You may need to do some research on the average living situation of your person, if you choose someone other than yourself.

1. Yourself in 10 years
2. Yourself in 20 years
3. A young, Hispanic single man
4. A middle-aged, White, male factory worker
5. An elderly, widowed man who rents a one-room apartment
6. A mother of seven children who lives in a rural cabin without plumbing of any kind
7. A middle-aged, Black man who lives with his wife and two children

Questions

1. How do you fill out the form if there are more than seven people living in your household?

2. How do you list a college student who is actually living away from home in a college dormitory?

3. The Census Bureau defines a family as all persons living in the same housing unit who are related to the person listed in the first column by blood or marriage. Which categories in question 2 of the questionnaire would represent family members? What might some of the write-in answers to that question be?

4. If you lived in a houseboat with an enclosed engine room, bathroom, and a combination bedroom and kitchen, how many rooms would you say you had (question H7)?

THE 1980 CENSUS QUESTIONNAIRE—THE "SHORT" FORM

1980 Census of the United States

How to fill out your Census Form

Page 1

See the filled-out example in the yellow instruction guide. This guide will help with any problems you may have.

If you need more help, call the Census Office. The telephone number of the local office is shown at the bottom of the address box on the front cover.

Use a black pencil to answer the questions. Black pencil is better to use than ballpoint or other pens.

Fill circles ○ completely, like this ●

When you write in an answer, print or write clearly.

Make sure that answers are provided for everyone here.

See page 4 of the guide if a roomer or someone else in the household does not want to give you all the information for the form.

Answer the questions on pages 1 through 5, and then starting with pages 6 and 7, fill a pair of pages for each person in the household.

Check your answers. Then write your name, the date, and telephone number on page 20.

Mail back this form on Tuesday, April 1, or as soon afterward as you can. Use the enclosed envelope; no stamp is needed.

Please start by answering Question 1 below.

A message from the Director, Bureau of the Census

We must, from time to time, take stock of ourselves as a people if our Nation is to meet successfully the many national and local challenges we face. This is the purpose of the 1980 census.

The essential need for a population census, still recognized almost 200 years ago when our Constitution was written, is provided by article I; the first census was conducted in 1790, and one has been taken every 10 years since then.

The law under which the census is taken protects the confidentiality of your answers. For the next 72 years — that is, until April 1, 2052 — only sworn census workers have access to the individual records, and no one else may see them.

Your answers, when combined with the answers from other people, will provide the statistical figures needed by public and private groups, schools, business and industry, and Federal, State, and local governments across the country. These figures will help all sectors of American society understand how our population and housing are changing. In this way, we can deal more effectively with today's problems and work toward a better future for all of us.

The census is a vitally important national activity. Please do your part by filling out this census form accurately and completely. If you mail it back promptly in the enclosed postage-paid envelope, it will save the expense and inconvenience of a census taker having to visit you.

Thank you for your cooperation.

Please continue →

Form Approved
O.M.B. No. 41-S78006

Question 1

List in Question 1

- Family members living here, including babies still in the hospital
- Relatives living here
- Lodgers or boarders living here
- Other persons living here
- College students who stay here while attending college, even if their parents live elsewhere
- Persons who usually live here but are temporarily away, including children in boarding school below the college level
- Persons with a home elsewhere but who stay here most of the week while working

Do Not List in Question 1

- Any person away from here in the Armed Forces
- Any college student who stays somewhere else while attending college
- Any person who usually stays somewhere else most of the week while working there
- Any person away from here in an institution such as a home for the aged or mental hospital
- Any person staying or visiting here who has a usual home elsewhere

1 What is the name of each person who was living here on Tuesday, April 1, 1980, or who was staying or visiting here and had no other home?

Note

If everyone here is staying only temporarily and has a usual home elsewhere, please mark this box ☐

Then please
- answer the questions on pages 2 through 5 only, and
- enter the address of your usual home on page 20.

Please continue →

THE 1980 CENSUS QUESTIONNAIRE (CONT.)

NOTE: Because of space limitation we have reduced the size of the questionnaire and have eliminated columns 4 to 6, and the back cover.

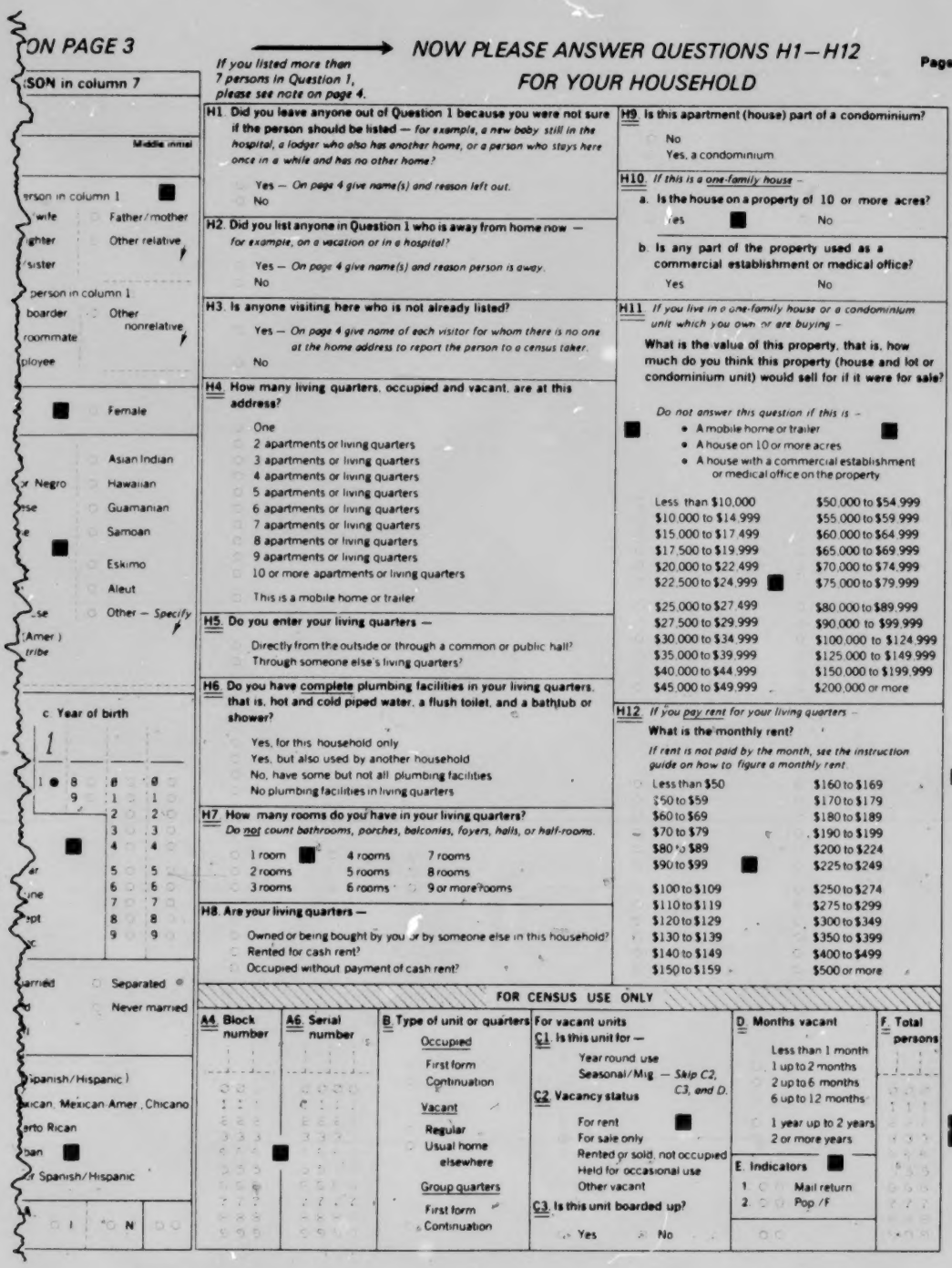
CENSUS '80 APRIL 1

Page 2

→ ALSO ANSWER THE HOUSING QUESTIONS ON PAGE 3

Here are the QUESTIONS ↓	These are the columns for ANSWERS → Please fill one column for each person listed in Question 1.	PERSON in column 1	PERSON in column 2	PERSON in column 3
		Last name First name — Middle initial	Last name First name — Middle initial	Last name First name — Middle initial
2. How is this person related to the person in column 1? *Fill one circle.* *If "Other relative" of person in column 1, give exact relationship, such as mother-in-law, niece, grandson, etc.*		*START in this column with the household member (or one of the members) in whose name the home is owned or rented. If there is no such person, start in this column with any adult household member.*	If relative of person in column 1: Husband/wife; Father/mother; Son/daughter; Other relative; Brother/sister If not related to person in column 1: Roomer, boarder; Other nonrelative; Partner, roommate; Paid employee	If relative of person in column 1: Husband/wife; Father/mother; Son/daughter; Other relative; Brother/sister If not related to person in column 1: Roomer, boarder; Other nonrelative; Partner, roommate; Paid employee
3. Sex *Fill one circle.*		Male ■ Female	Male ■ Female	Male ■ Female
4. Is this person — *Fill one circle.*		White; Black or Negro; Japanese; Chinese; Filipino; Korean; Vietnamese; Indian (Amer.) *Print tribe*; Asian Indian; Hawaiian; Guamanian; Samoan; Eskimo; Aleut; Other — *Specify*	White; Black or Negro; Japanese; Chinese; Filipino; Korean; Vietnamese; Indian (Amer.) *Print tribe*; Asian Indian; Hawaiian; Guamanian; Samoan; Eskimo; Aleut; Other — *Specify*	White; Black or Negro; Japanese; Chinese; Filipino; Korean; Vietnamese; Indian (Amer.) *Print tribe*; Asian Indian; Hawaiian; Guamanian; Samoan; Eskimo; Aleut; Other — *Specify*
5. Age, and month and year of birth *a. Print age at last birthday.* *b. Print month and fill one circle.* *c. Print year in the spaces, and fill one circle below each number.*		a. Age at last birthday; c. Year of birth b. Month of birth: Jan—Mar; Apr—June; July—Sept; Oct—Dec	a. Age at last birthday; c. Year of birth b. Month of birth: Jan—Mar; Apr—June; July—Sept; Oct—Dec	a. Age at last birthday; c. Year of birth b. Month of birth: Jan—Mar; Apr—June; July—Sept; Oct—Dec
6. Marital status *Fill one circle.*		Now married; Separated; Widowed; Never married; Divorced	Now married; Separated; Widowed; Never married; Divorced	Now married; Separated; Widowed; Never married; Divorced
7. Is this person of Spanish/Hispanic origin or descent? *Fill one circle.*		No (not Spanish/Hispanic); Yes, Mexican, Mexican Amer., Chicano; Yes, Puerto Rican; Yes, Cuban ■; Yes, other Spanish/Hispanic	No (not Spanish/Hispanic); Yes, Mexican, Mexican Amer., Chicano; Yes, Puerto Rican; Yes, Cuban ■; Yes, other Spanish/Hispanic	No (not Spanish/Hispanic); Yes, Mexican, Mexican Amer., Chicano; Yes, Puerto Rican; Yes, Cuban ■; Yes, other Spanish/Hispanic
		CENSUS USE ONLY — A. I N	CENSUS USE ONLY — A. I N	CENSUS USE ONLY — A. I N

THE 1980 CENSUS QUESTIONNAIRE (CONT.)



ON PAGE 3

SON in column 7

Middle initial

erson in column 1
wife
ghter
sister

person in column 1
boarder
roommate
ployee

Father / mother
Other relative

Other nonrelative

Female

Asian Indian
r Negro
ese
e
Hawaiian
Guamanian
Samoan
Eskimo
Aleut
se
Other — Specify
(Amer.)
tribe

c. Year of birth

1

ar
ne
ept
c

arried
d
Separated
Never married

Spanish/Hispanic)
ican, Mexican Amer., Chicano
erto Rican
ban
r Spanish/Hispanic

A

If you listed more than 7 persons in Question 1, please see note on page 4.

NOW PLEASE ANSWER QUESTIONS H1—H12 FOR YOUR HOUSEHOLD

Page 3

H1. Did you leave anyone out of Question 1 because you were not sure if the person should be listed — *for example, a new baby still in the hospital, a lodger who also has another home, or a person who stays here once in a while and has no other home?*

Yes — *On page 4 give name(s) and reason left out.*
No

H2. Did you list anyone in Question 1 who is away from home now — *for example, on a vacation or in a hospital?*

Yes — *On page 4 give name(s) and reason person is away.*
No

H3. Is anyone visiting here who is not already listed?

Yes — *On page 4 give name of each visitor for whom there is no one at the home address to report the person to a census taker.*
No

H4. How many living quarters, occupied and vacant, are at this address?

One
2 apartments or living quarters
3 apartments or living quarters
4 apartments or living quarters
5 apartments or living quarters
6 apartments or living quarters
7 apartments or living quarters
8 apartments or living quarters
9 apartments or living quarters
10 or more apartments or living quarters
This is a mobile home or trailer

H5. Do you enter your living quarters —

Directly from the outside or through a common or public hall?
Through someone else's living quarters?

H6. Do you have complete plumbing facilities in your living quarters, that is, hot and cold piped water, a flush toilet, and a bathtub or shower?

Yes, for this household only
Yes, but also used by another household
No, have some but not all plumbing facilities
No plumbing facilities in living quarters

H7. How many rooms do you have in your living quarters? *Do not count bathrooms, porches, balconies, foyers, halls, or half-rooms.*

1 room
2 rooms
3 rooms
4 rooms
5 rooms
6 rooms
7 rooms
8 rooms
9 or more rooms

H8. Are your living quarters —

Owned or being bought by you or by someone else in this household?
Rented for cash rent?
Occupied without payment of cash rent?

H9. Is this apartment (house) part of a condominium?

No
Yes, a condominium

H10. *If this is a one-family house* —

a. Is the house on a property of 10 or more acres?
Yes
No

b. Is any part of the property used as a commercial establishment or medical office?
Yes
No

H11. *If you live in a one-family house or a condominium unit which you own or are buying* —

What is the value of this property, that is, how much do you think this property (house and lot or condominium unit) would sell for if it were for sale?

Do not answer this question if this is —
- A mobile home or trailer
- A house on 10 or more acres
- A house with a commercial establishment or medical office on the property

Less than $10,000
$10,000 to $14,999
$15,000 to $17,499
$17,500 to $19,999
$20,000 to $22,499
$22,500 to $24,999
$25,000 to $27,499
$27,500 to $29,999
$30,000 to $34,999
$35,000 to $39,999
$40,000 to $44,999
$45,000 to $49,999
$50,000 to $54,999
$55,000 to $59,999
$60,000 to $64,999
$65,000 to $69,999
$70,000 to $74,999
$75,000 to $79,999
$80,000 to $89,999
$90,000 to $99,999
$100,000 to $124,999
$125,000 to $149,999
$150,000 to $199,999
$200,000 or more

H12. *If you pay rent for your living quarters* —

What is the monthly rent?

If rent is not paid by the month, see the instruction guide on how to figure a monthly rent.

Less than $50
$50 to $59
$60 to $69
$70 to $79
$80 to $89
$90 to $99
$100 to $109
$110 to $119
$120 to $129
$130 to $139
$140 to $149
$150 to $159
$160 to $169
$170 to $179
$180 to $189
$190 to $199
$200 to $224
$225 to $249
$250 to $274
$275 to $299
$300 to $349
$350 to $399
$400 to $499
$500 or more

FOR CENSUS USE ONLY

A4. Block number

A6. Serial number

B. Type of unit or quarters
Occupied
First form
Continuation
Vacant
Regular
Usual home elsewhere
Group quarters
First form
Continuation

For vacant units
C1. Is this unit for —
Year round use
Seasonal / Mig. — *Skip C2, C3, and D.*
C2. Vacancy status
For rent
For sale only
Rented or sold, not occupied
Held for occasional use
Other vacant
C3. Is this unit boarded up?
Yes
No

D. Months vacant
Less than 1 month
1 up to 2 months
2 up to 6 months
6 up to 12 months
1 year up to 2 years
2 or more years

E. Indicators
1 Mail return
2 Pop /F

F. Total persons

25

SUGGESTIONS FOR FURTHER WORK: The instructions provided on page 1 of the questionnaire were rather important because information was given regarding who should be counted. Consider for instance, the Census Bureau's problem in defining residency criteria for college students.

- Should college students be counted at their home (if they live away from home but are supported by their parents) or at their school residence?
- What difficulties might the Census Bureau encounter in assigning college students to a home address in another city?
- Should the Census Bureau take legal or voting residence into account in determining the residence of college students? Why not?
- Is it fair for cities with large college populations to get revenue sharing funds that would go to the home towns of the students if the census used different residency rules?

Answer each of these questions 1) as if you were a local official from the parents' home town and 2) as if you were a local official from the college town.

The Census Bureau's response to these difficult questions was presented in Data User News (DUN, March 1980). Information on other enumeration problems such as counting military personnel, persons in nursing homes, and migrant workers (March 1980), assigning individuals to the appropriate geographic location (April 1980), and differentiating between housing units and group quarters (November 1980) have also been addressed in DUN.

Q. Are college students counted at their home or at their school residence?

A. As in the past several censuses, college students are counted at their usual place of residence while attending school. Thus students who reside in dormitories or apartments near school are counted there, even if they go to their parental home for weekends and vacations.

Q. Why doesn't the Census Bureau take legal or voting residence into account in determining the residence of college students?

A. The practice of counting each person as an inhabitant of his or her usual place of residence has been followed since 1790. Information on legal or voting residence might not be known by many respondents, particularly since residency rules vary from State to State. Further, some persons maintain legal residence in a State where they have no actual place of residence, so it would be impossible to allocate them back to a specific housing unit.

Q. Is it fair for cities with large college populations to get revenue-sharing funds that would go to the home towns of the students if the census used different residency rules?

A. The Census Bureau is not involved in the determination of rules for distribution of revenue sharing funds. However, it has been argued that revenue sharing allocations based on usual place of residence are appropriate, since college students require services (such as police protection and public transportation) from the municipality in which they reside.

2.1

Evaluating Census Data for States and SMSA's

Urban and regional planners, marketing specialists, and other users of statistical data often find that their informational needs are met by using census data at the State or SMSA level. The decennial census, whether it be the 1960, 1970, or 1980 version, creates ample resources for each of these specialties. In fact, two publications, those covering block statistics and census tracts, provide rather detailed information for small areas within each SMSA. Unfortunately, many people fail to realize that there is additional information for measuring economic activities for States and SMSA's. This exercise introduces you to the data sets resulting from the demographic and economic censuses so that, should the need arise, you will be aware of the numerous statistical resources that are available for each of these geographic levels. The worksheet that you will complete should serve as a handy reference for future use. In addition, you may find that its utility as a summary form will extend to the evaluation of other statistical publications.

PROBLEM: Your instructor will select publications from the following list for your examination. This perusal will enable you to become familiar with their contents and to evaluate their utility. If possible, use the most recent set of publications.

1. Inventory your library's holdings to determine which publications are available (ask your documents librarian for assistance if needed).

2. Complete the following worksheet for each of the publications assigned by your instructor. Much of the information that you will need is provided in the introduction and the appendixes.

3. Turn in these worksheets to your instructor for review or prepare a folder for these sheets. Attach, as appropriate, photocopies of additional materials (e.g., "What's in the Tables," "Table Finding Guide") that you think would be valuable for future reference.

Selected Census Bureau Publications

Publication	Unit of Issue	Most Recent Census	Previous Census
Population and Housing			
Characteristics of the Population (the following 4 chapters were also published as a single volume for your State in 1970)	State	PC80-1	PC(1)
Number of Inhabitants	State	PC80-1-A	PC(1)-A
General Population Characteristics	State	PC80-1-B	PC(1)-B
General Social and Economic Characteristics	State	PC80-1-C	PC(1)-C
Detailed Population Characteristics	State	PC80-1-D*	PC(1)-D
Characteristics of Housing Units (the following 2 chapters were also published as a single volume for your State)	State	HC80-1	HC(1)
General Housing Characteristics	State	HC80-1-A	HC(1)-A
Detailed Housing Characteristics	State	HC80-1-B	HC(1)-B
Metropolitan Housing Characteristics	State (1980 only) and SMSA	HC80-2*	HC(2)
Block Statistics	SMSA and State	PHC80-1* 1/	HC(3) 2/
Census Tracts	SMSA and State	PHC80-2* 1/	PHC(1) 3/
Summary Characteristics for Governmental Units and SMSA's	State	PHC80-3	
Economic			
Retail Trade			
Final Geographic Area	State	RC77-A	RC72-A
Major Retail Centers	State (by SMSA)	RC77-C	RC72-C
Service Industries			
Final Geographic Area	State	SC77-A	SC72-A
Wholesale Trade			
Final Geographic Area	State	WC77-A	WC72-A
Construction			
Final Geographic Area	Census Divisions	CC77-A	
	State		CC72-A
Manufactures			
Final Geographic Area	State	MC77-A	MC72(3)
County Business Patterns	State and SMSA	CBP (Yearly)	CBP (Yearly)

* Issued only on microfiche
1/ State remainders (i.e., not in SMSA's) are issued separately.
2/ Issued for urbanized areas instead of SMSA's.
3/ Tract data for the State remainder were not published.

WORKSHEET 1

Summary Characteristics of Selected Census Publications

1. Name and year of census .....

2. Publication name.....

3. Report number .....

4. If this is a recurring report, when was the previous report issued for your area? .....

5 What is its universe (e.g., people, firms)? .....

6. Were the same type of questionnaires sent to the entire universe? .....

   If not, what additional procedures were used to collect the needed data? .....

7. If the data represent a sample of the universe, where in the publication can information be found on the sampling error? .....

8. How many tables include statistics for the following types of areas (use the information provided in the table finding guide, etc.)? ..... Your State _____ Your place _____ Your SMSA _____ Your census tract _____ Your county _____ Your block _____

9 What kind of summary graphics (e.g., maps, charts) are provided? .....

10. What symbols are used to indicate: ..... A zero value _____ Data not available _____ Suppression _____ Other (please specify) _____

11. Given your interest and background, what variables in this report would be the most useful to you? .....

12. Given your interests and background, what tables would be the most useful to you? .....

13. What limitations need to be considered when using this report (e.g., sampling error, nonsampling error, timeliness of the data, appropriateness of the data)? Please specify the limitations on the back. .....

2.2

Cost-Effectiveness of Data Search Methodologies

Articles that cite trends and benchmarks about the local area or the Nation frequently appear in local newspapers. Since most only sketch what the data reveal, the serious researcher may need to go to the original source (and perhaps to additional sources to study the data in greater depth). This exercise introduces several alternative strategies for going after extra material. By comparing the results with your colleagues, you will be better prepared to evaluate the cost-effectiveness of several data search methodologies.

PROBLEM: As a recent college graduate, you have accepted a position as a junior research associate with Futures Unlimited, a new company offering real estate consulting services to persons being transferred to the area. Ms. Settler, your new boss, is extremely interested in learning whether a trend observed in the Washington, D.C., area is also occurring in your area. Specifically, the article noted that the "Washington, D.C., area is an area with a central city occupied by the very rich and the very poor, while its suburbs sort out according to who is single, who is married, and who has children." It went on to indicate that these trends will create unique problems for each of the areas in Washington.

Ms. Settler has asked you to collect data from statistical resources that would document whether these changes have occurred in your SMSA (or city and county if you are not in an SMSA) since 1970. She requested that, given the limitations of time and money, only one avenue may be used to explore the assigned problem.

Because the exercise is designed to help you become familiar with alternative search strategies, you will be evaluated on the completeness of the search rather than on the specific information that you collect. Thus, it is important to pursue the leads that are suggested by your assigned source.

Three worksheets have been provided for your use. The first one will help you record the progress that you are making towards a timely completion of the assignment. Such accounting procedures are used in the business world to assist in billing the appropriate client. Complete worksheets 2 and 3 after the project is completed. This information will help you to share and evaluate the experience with others in the class.

Your instructor will assign one of the following options as a starting point for your search. Use this resource wisely by being prepared to state in a precise manner what it is that you want to know, what the area is, and what the time period is. Carefully listen for any information leads that will help you to complete this assignment in a professional manner.

1. Visit either the local government depository or university library. Not only can you find there myriad resources, but also most librarians in the documents section can offer the novice some helpful hints regarding their use.

2. Nearly all parts of the country are organized into councils of governments (COG's); these agencies often have several statistical reports on hand that they or others produce about the area or the constituent parts of their region. Initiate your inquiry by contacting the COG (or its equivalent) in your area.

3. The Chamber of Commerce collects data from a variety of sources to promote the assets of the local area. Use their resources and referrals as a point of departure for this important assignment.

4. Several statistical resources on population and housing issues are published by the Bureau of the Census. Although this agency is located in Washington, D.C., information services specialists are located in each of 12 regional offices to assist inquirers (such as yourself) in locating the needed information. Several of the resources they will suggest are available locally. You should start your search by contacting the appropriate information services specialist from the following list:

Washington contact: Data User Services Division, Bureau of the Census, Washington, D.C. 20233 (301) 899-7600

Regional office contacts:

Atlanta, Ga. 1365 Peachtree St., NE, Room 638, 30309 (404) 881-2274.
Boston, Mass. 441 Stuart St., 8th Floor, 02116 (617) 223-0668.
Charlotte, N.C. 230 South Tryon St., Suite 800, 28202 (704) 371-6144.
Chicago, Ill. 55 E. Jackson Blvd., Suite 1304, 60604 (302) 353-0980.
Dallas, Texas 1100 Commerce St., Room 3C54, 75242 (214) 767-0625.
Denver, Colo. 575 Union Blvd., 80225 (303) 234-5825.
Detroit, Mich. Federal Bldg. & U.S. Courthouse, Room 565, 231 West Lafayette, 48226 (313) 226-4675.
Kansas City, Kans. One Gateway Center, 4th & State Sts., 66101 (816) 374-4601.
Los Angeles, Calif. 11777 San Vincente Blvd., 8th Floor, 90049 (213) 824-7291.
New York, N.Y. 26 Federal Plaza, Federal Office Bldg., Room 37-130, 10007
Philadelphia, Pa. 600 Arch St., Room 9226, 19106 (215) 597-8314.
Seattle, Wash. 915 2nd Ave., Room 312, 98174 (206) 442-7080.

5. The local newspaper files offer an interesting source of information on current trends. Information on local items of interest are frequently collected as a result of the efforts of their investigative reporters. Begin your task by developing a list of key words that might be used to help the newspaper's librarian locate the most appropriate files for you.

6. Resources are frequently available from bureaus of business or urban affairs at the local university. Start your search by consulting the university's departmental directory to determine the most appropriate individuals to visit.

7. Several private firms specialize in the dissemination of statistical data. A recent listing of these vendors is provided in an article entitled "Demographic Supermarkets of the Eighties." American Demographics 3 (February 1981): 15-21. Use this list to select an appropriate vendor. (Because its fee structure might well be too expensive for you, determine what suggestions one of these firms might provide, get a firm to do a cost estimate for providing the needed information, and obtain a brochure that describes the firm's services.) Use their suggestions regarding additional sources as a way to continue your data search.

WORKSHEET 1
Project Time Log

Date	Time Spent (minutes)	Source Examined or Person Contacted	Summary of Work Completed or Information Obtained

2.2

WORKSHEET 2

A. Rank order from the most important to the least important the items (such as tables and maps that you collected for your presentation).

Title of Item	Date	Source
1.		
2.		
3.		
4.		
5.		
6.		
7.		
8.		
9.		
10.		

B. Briefly summarize your findings.

A. Which alternative (1-7) did you choose?

B. Based upon the data that you collected, evaluate the results of the investment of your company's time and resources on this task by circling the most appropriate response.

(1 = strongly agree; 2 = agree; 3 = undecided; 4 = disagree; 5 = strongly disagree)

	SA	A	U	D	SD
1. I have been able to assemble a considerable amount of data that is up to date (sources reflect data not more than 2 years old).	1	2	3	4	5
2. I believe that my boss would be pleased because I have been able to locate the most complete set of data available on the topic.	1	2	3	4	5
3. I have been able to assemble the most current data that are available.	1	2	3	4	5
4. I was rather frustrated with the task because this was the first time that I have been asked to search for statistical information.	1	2	3	4	5
5. I was rather frustrated with the task because the sources that I used were not as helpful as I had hoped.	1	2	3	4	5
6. Compared to other data that may be available I am confident that the data I collected reflects the characteristics of the area or population without bias.	1	2	3	4	5
7. Compared to the other levels of geography (such as central city, SMSA, and county) that might have been available, my choice (please be specific) _____ was the most appropriate.	1	2	3	4	5
8. I believe that my use of the company's resources (money and time) was wise.	1	2	3	4	5
9. I believe I could have completed the task to my satisfaction if I had been able to spend twice as much time on it.	1	2	3	4	5
10. I would be able to perform a similar task much more efficiently and completely next time because of this experience.	1	2	3	4	5

C. Estimate of costs

My partner(s) and I spent a total of _____ hours (@ $6.00 per hour) on the project. _____

I estimate that the persons we contacted spent a total of _____ hours (@ $12.00 per hour) of their time on the project. _____

We incurred the following miscellaneous expenses:

Travel (@ 20¢ per mile) _____

Computer time (use local fee structure) _____

Other _____

Total miscellaneous expenses _____

Total costs [ ]

D. If I were assigned a similar task again, I would use the following procedures and resources to solve the problem (provide answers on a separate sheet of paper).

2.3

Understanding Census Geography Concepts for the City

For most people, the terms urban, metropolitan, and urbanized area are synonymous with "city." But is this a correct assumption? The following exercise introduces a few terms to stress the importance of precision in the choice of technical definitions and concepts.

PROBLEM: Are the terms "urban" and "metropolitan" interchangeable? Or, if an area is metropolitan, must it be entirely urban? If your answer to either of these questions is "yes," then the County and City Data Book (CCDB), 1977 has a surprise for you in table 3 (figure 1). Column 8 reveals that there is a large variation in the percentages of the population of these metropolitan areas (SMSA's) that are urban: the Ashville, N.C. SMSA was only 47.0 percent urban; whereas, the Anaheim-Santa Ana-Garden Grove, California, SMSA was 98.8 percent! Apparently, if a person plans to use these terms, some research is warranted to ensure that they are correctly applied.

1. Review the table of contents of the CCDB, 1977 to locate technical information that will clarify the meaning of "urban" and "metropolitan." Similar technical notes can be found in other Census Bureau publications.

2. Search through the section on "geographic concepts and codes" and list all of the geographic terms that seem to be related to your understanding of "city" (i.e., SMSA, metropolitan, urbanized area, city, extended city, place). Then, write in your own words a one-sentence definition for each of these terms. Which definitions seem to be the most difficult to comprehend? What information is available to help you determine why an SMSA can have a portion of its population not be urban? Are the terms urbanized, city, place, and metropolitan synonymous?

3. Locate the section within the "source notes and explanations" that provides further information on the definition of the terms used in the "column heads." Descriptions of items in the boxhead for tables 1,2, and 3 of the CCDB are located in the first part of this section. Read the technical information that is provided for item 8, "Urban Population, 1970" in the CCDB (or use figure 2) to answer the following questions:

- What is the minimum population needed for an area to be urban if it is located outside of an urbanized area (i.e., a central city or cities and surrounding closely settled territory)?
- Must an area be incorporated to be urban?
- The area that is not classified as urban is termed rural. Describe the circumstances under which a 2,000-acre dairy farm could be listed as part of an "urban" rather than a "rural" area.

4. The information provided in item 8 (figure 2) suggests that the "urban" statistic in the CCDB, 1977 came from the Census of Population: 1970 Vol. 1, Characteristics of the Population.

Use the information in the 1970 volume for North Carolina as shown in figures 3-5 to help answer the following questions and unravel this puzzle (HINT: the Asheville, N.C., SMSA is equivalent to Buncombe County, N.C.).

- Where on figure 5 is the Buncombe County line? How do you know?
- Does the Buncombe County boundary coincide with the incorporated place of Asheville?
- Black Mountain town had a population in 1970 greater than 2,500 but it was located outside of the urbanized area of the SMSA. Was it urban?

FIGURE 1

Table 3.—STANDARD METROPOLITAN STATISTICAL AREAS

Minus sign (—) denotes decrease. For area components, see appendix C)

SMSA Code	Area (As defined effective June 1977)	Land area	Population														
			1970 (July 1)				1972 (July 1)	1970 (April 1)				Change 1970-1972			Change 1960-1970		
			U.S. rank	Total	Per square mile	65 years and over		Total	Urban	Black	Foreign stock	Total	Net civil in-migration	Net migration	Total	Net migration
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
		Sq mi				Per cent			Per cent	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent
	277 SMSA's, total	(NA)	(X)	155 699 570	NA	NA	(NA)	149 467 374	(NA)	(NA)	(NA)	NA	NA	NA	(NA)	(NA)
0080	Anaheim-Santa Ana-Garden Grove, Calif.	782	19	1 699 688	2 173	7.7	1 929 700	1 421 233	98.8	.7	19.9	20.3	5.5	14.8	101.9	78.4
0200	Anchorage, Alaska	1 449	189	181 018	125	1.5	142 200	126 385	68.5	4.2	11.4	22.4	11.0	11.4	92.6	22.3
0400	Anderson, Ind.	453	206	138 568	306	9.8	141 700	138 522	70.9	5.4	3.1	-.3	4.5	-4.8	10.1	-2.1
0440	Ann Arbor, Mich.	711	143	244 729	344	6.0	239 300	234 103	78.3	7.6	15.3	9.5	5.8	3.8	35.8	18.1
0651	Anniston, Ala.	611	242	106 491	174	9.3	104 000	103 092	66.1	17.1	1.8	3.2	4.6	-1.3	7.5	-6.0
0680	Appleton-Oshkosh, Wis.	1 409	124	283 700	202	9.9	283 100	276 948	70.4	.1	12.2	3.0	3.8	-.8	19.4	3.8
0685	Asheville, N.C.	1 107	182	197 759	152	12.9	193 600	161 059	47.0	4.0	2.1	4.2	1.8	2.5	9.3	.9
0520	Atlanta, Ga.	4 326	19	1 790 128	414	7.3	1 885 600	1 595 517	77.4	21.7	3.9	13.2	5.9	7.3	38.5	19.7
0560	Atlantic City, N.J.	569	165	168 106	331	10.2	182 900	175 043	81.1	17.4	23.7	8.4	.5	7.9	8.8	4.0

Source: CCDB, 1977

FIGURE 2

Excerpt From "Source Notes and Explanation"
County and City Data Book, 1977

Item 8. Urban population, 1970.

Source: U.S. Bureau of the Census, *Census of Population: 1970*, Vol. I, *Characteristics of the Population.*

The urban population comprises all persons living in (a) places of 2,500 inhabitants or more incorporated as cities, boroughs (except in Alaska), villages, and towns (except in the New England States, New York, and Wisconsin), but excludes persons living in rural portions of *extended* cities (i.e., cities whose boundaries have been extended, such as city/county consolidation to include sizable portions of territory that is rural in character); (b) unincorporated places of 2,500 inhabitants or more; and (c) other territory, incorporated or unincorporated, included in urbanized areas (a central city or cities and surrounding closely settled territory) at the time of the 1970 census.

- What was the total population in 1970 of Biltmore Forest town (Hint: it was larger than 1,000)? Was it urban? Use figure 5 to determine if it was urbanized.
- Skyland was an unincorporated place (U) of 2,177 in 1970. Was it included in the urban category for 1970? List at least two ways that it could be considered urban as a result of the 1980 census.
- List the places that were rural in 1970 (if the total population of these places equals 7,672, then your answer is correct).
- What percentage of the SMSA (Buncombe County) population lives in an unincorporated place?

FIGURE 3

Population of Buncombe County, N.C.: 1960 and 1970

County Subdivisions	1970	1960	Percent change
Buncombe County*	145,056	130,074	11.5
Asheville township	74,174	73,975	0.3
Asheville city (part)*	57,343	60,185	-4.7
Biltmore Forest town (part)	743	676	9.9
Avery Creek township	2,717	1,342	102.5
Black Mountain township	7,310	7,477	-2.2
Black Mountain town	3,204	1,313	144.0
Broad River township	789	705	11.9
Fairview township	3,348	2,831	18.3
Flat Creek township	1,921	2,162	-11.1
Jupiter town	208	174	19.5
French Broad township	1,727	1,710	1.0
Ivy township*	2,705	2,568	5.3
Leicester township	7,581	5,629	34.7
Asheville city (part)*	229	1	800.0
Limestone township	8,947	5,029	77.9
Biltmore Forest town (part)	555	328	69.2
Royal Pines (U)	2,041	...	...
Skyland (U)	2,177	...	...
Lower Hominy township	8,302	6,264	32.5
Asheville city (part)*	109	3	533.3
Reems Creek township	6,182	4,376	41.3
Weaverville town	1,280	1,041	23.0
Sandy Mush township	665	726	-8.4
Swannanoa township	10,547	8,611	22.5
Swannanoa (U)	1,966	2,189	-10.2
Upper Hominy township	8,141	6,669	22.1

Source: 1970 PC(1)-A35 (table 10).

5. Using the information provided in figures 3-5, write a paragraph to explain why the Asheville, N.C., metropolitan area is only 47 percent urban in 1970. Include in this explanation examples from the area of towns that are rural and ones, whether incorporated or incorporated, that are urban.

6. Now that you understand why areas that are metropolitan do not need to be entirely urban, lets reverse the question. If an area is urban, must it be metropolitan? Or how about these questions: Does your State contain more urban areas or more urbanized areas? Does a larger percentage of the State's population live in urbanized areas, urban areas, or metropolitan areas?

FIGURE 4

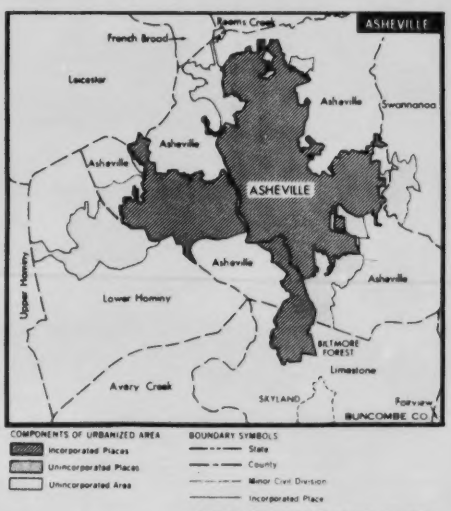
Buncombe County, N.C., Subdivisions/
Townships and Places

SYMBOLS
COUNTY
MINOR CIVIL DIVISION
INCORPORATED OR UNINCORPORATED PLACE NOT A MINOR CIVIL DIVISION
INCORPORATED OR UNINCORPORATED PLACE WITH FEWER THAN 2,500 INHABITANTS
INCORPORATED PLACE FOR WHICH NO BOUNDARY INFORMATION WAS AVAILABLE
TYPE STYLES
COUNTY
MINOR CIVIL DIVISION
INCORPORATED PLACE WITH 50,000 OR MORE INHABITANTS
INCORPORATED PLACE WITH FEWER THAN 50,000 INHABITANTS
UNINCORPORATED PLACE

Source: 1970 PC(1)-A35.

FIGURE 5

Map of the Asheville, N.C., Urbanized Area



Source: 1970 PC(1)-A35.

Statistical Resources That Collect and Refer

James Michener, the American novelist, recently said that "for half a century I have used the Statistical Abstract to clarify and fortify my thinking, and I find that I use it in three distinct ways: To explain my homeland, to make comparisons with other nations, and to amuse myself in idle exploration. The first is by far the most revealing. In preparing any statement about the quality of American life I first consult the Abstract to assure myself that I know what I'm talking about, and often my casual preconceptions are blasted by data of which I have not been aware."[1/] This set of activities explores the facinating statistical resources that have assisted countless individuals in their exploration of socioeconomic characteristics.

The Statistical Abstract is one of several statistical compendia (as illustrated in table 1) that assist countless individuals in their exploration of such American cultural characteristics. These compendia have two basic functions: collecting and referring. The collecting function consists of assembling, selecting, and arranging data from hundreds of sources and making them available within a single volume. The referring function is fulfilled by providing text annotations for the data to guide the user toward sources that offer greater detail. The annotations also define terms used in the tables and include essential qualifying statements.

This exercise contains four activities: A general introduction to the use of these compendia; information on how to read and construct a statistical table; an activity on the collecting function; and another on the referring function. It is designed to help you develop useful skills for research. Take some time, however, to "amuse yourself in idle exploration" so that, like Michener, you will come to appreciate the stories that each page is waiting to tell!

1/ U.S. Department of Commerce, Bureau of the Census, Reflections of America: Commemorating the Statistical Abstract Centennial (Washington, D.C.: U.S. Government Printing Office, 1980), p. 158.

TABLE 1

Selected Characteristics of Statistical Compendia Published by the Bureau of the Census

Statistical Compendia	Years for Which Data are Included	Subject Detail/ Inclusion of Divergent Sources	Geographic Detail	Frequency of Issue
Statistical Abstract[1/]	Recent time series data	Most	Nation, regions, divisions, States, SMSA's, selected foreign countries	Annually
Historical Statistics: Colonial Times to 1970	Time series data from colonial times		Nation	Roughly every 10 years
State and Metropolitan Area Data Book, 1979	Seldom before 1960		Nation, regions, divisions, States, SMSA's, metropolitan counties	Every 2 years
County and City Data Book, 1977	Seldom before 1970	Least	Nation, regions, divisions, States, counties, SMSA's, cities of 25,000 +	Every 5 years

1/ Tables in this volume are cross-referenced to Historical Statistics where applicable.

Activity 1: An Introduction to the Use of Statistical Compendia

A perusal of any of the volumes listed in table 1 will undoubtedly convince you that detailed information on the contents of and the sources for each table has been carefully included. Although simpler tables on the same topics could be constructed, remember that the statistical compendia have two purposes: collecting and referring. This activity highlights the structure of these volumes by focusing on the Statistical Abstract (use the most recent edition).

1. Review the contents section. A quick overview of the types of statistical data that are available in the Abstract can be accomplished by reviewing the more than 30 major subjects that are listed in the "contents." Using the information provided there, determine the sections that offer in your opinion the greatest potential for dealing with Michener's three functions of the Abstract:

- explaining your homeland
- making comparisons with other Nations
- providing amusement for idle exploration (i.e., which sections stimulate your curiosity?)

2. Study the index. Following up on Michener's suggestion, choose a topic of interest to you. Information on tables relating to your topic may well be in the table of contents; however, a much more detailed listing of subjects is given in the index. Although hardly all-inclusive, the Statistical Abstract's 40+ page index presents over 6,000 entries. Use it to see if additional resources are available on your topic.

3. Review the introductory materials provided with the sections you have selected. Within each section, the reader can find an introduction that presents information on data sources used, concepts that are needed, and statements for further reference. Many sections also contain graphics to highlight selected statistical trends.

Examine the introduction to the section on population to answer the following questions:

- What three data sources are used in this section?
- In which section of the Statistical Abstract might a person find further information on "statistical reliability"?
- What is the difference between race and ethnic origin?

4. Consider the notations that are included in statistical tables. The "guide to tabular presentation" that is included at the beginning of the Statistical Abstract contains detailed information to help you understand the symbols and calculations that accompany many of the tables. Use this guide to answer the following questions:

- What can you infer from the symbols that were used in the tables regarding the problems that the compilers of these data encountered?
- What symbols were used to indicate that the quality of the data is an important factor to be considered when publishing the Abstract?
- Certain terms used in the tables require careful definition. What is the difference between "arithmetic mean" and "median"? What is the primary usefulness of an index number?

By completing the above activity, you can presumably now use all statistical compendia with a greater degree of sophistication. The following guidelines may prove to be helpful when you need to seek statistical information from such compendia as the Historical Statistics, Statistical Abstract, County and City Data Book, or the State and Metropolitan Area Data Book or any other statistical volume:

- Review the table of contents to determine the general structure and contents of the volume (this procedure is important because each publication has its own unique structure)
- Check to see if the volume contains a set of abbreviated column headings or a subject index that would aid in your research
- Review the geographic concepts and source notes for the items chosen so that the data are not misused
- Peruse the appendixes to determine if there are additional guides, limitations, or comments that would help you avoid the improper use of statistical data
- Check the information available on the table itself to determine if its universe, time, and concepts are the proper ones to meet your needs

Activity 2: Reading a Statistical Table

In Statistics: A New Approach,[2/] Wallis and Roberts suggest that "ordinary reading ability is no more effective in reading a table than an ordinary can opener in opening a can of sardines, and if you go at it with a hammer and chisel you are likely to mutilate the contents." This activity will help you to avoid this hammer and chisel approach when you use statistical tables.

Wallis and Roberts suggest that if you follow a systematic procedure you can quickly grasp the information included in a table. Use their 10 steps as you study the information presented in figure 1.

1. Read the title carefully

2. Read the headnote or other explanation carefully

3. Notice the source

4. Look at the footnotes

5. Find out what units are used

6. Look at the overall average

7. See what variability there is

8. See how the average is associated with each of the main criteria of classification

9. Examine the consistency of the overall effects and the interactions among them

10. Finally, look for things you weren't looking for--aberrations, anomalies, or irregularities

It is one thing to be able to read a statistical table; it is quite another to construct a table to meet your individual needs. For instance, suppose you wanted to know the total and the percentage of all persons in selected types of residential areas that are Black so that a comparison could be made with similar information from an earlier time period. Table 21 (Population, by Metro-Nonmetro Residence and Race: 1950 to 1979) of the 1980 Statistical Abstract includes the necessary information; however, it was not specifically organized to address this issue. Use your new knowledge regarding the parts of a statistical table (figure 1) and its contents (figure 3 or a more recent set of relevant data) to create a new table that presents the desired information. The following instructions, which are grouped by elements of the table structure, will help you to construct your new table:

Stub. The same residential categories (i.e., SMSA's, central cities, outside central cities, metropolitan areas) that were in the original table should indicate residence.

Spanner. Divide this table portion into two parts: one will present information for the first time (e.g., 1950); the second, information for the later time (e.g., 1970).

Column heads. A two-level column head will be needed so that information on both the total and Black population figures can be used to calculate the percentage of Blacks within each area. The first-level column head (to be placed immediately below each section of the spanner) should be labeled "total" and "Black." "Total" and "Percent" should be used as the titles for the second-level column heads and should appear below the "Black" column head

FIGURE 1

Table number and title — No. 215. Enrollment in Public and Private Schools: 1960 to 1977

Unit indicator — (In millions of persons 3 to 34 years of age. As of October. Elementary includes grades 1–8; high school, grades 9–12. College data represent degree-credit enrollment) — *Headnote*

Footnote indicator

LEVEL	1960 [1]			1970			1977		
	Total	Public	Private	Total	Public	Private	Total	Public	Private
Stub — Total	46.3	39.0	7.2	60.4	52.2	8.1	60.0	51.6	8.4
Nursery	(NA)	(NA)	(NA)	1.1	.3	.8	1.8	.6	1.1
Kindergarten	2.1	1.7	.4	3.2	2.6	.5	3.2	2.7	.5
Elementary	30.3	25.8	4.5	34.0	30.0	3.9	29.2	26.0	3.3
High school	10.2	9.2	1.0	14.7	13.5	1.2	15.8	14.5	1.2
College	3.6	2.3	1.3	7.4	5.7	1.7	10.2	7.9	2.3

Spanner — *Column heads* — *Field* — *Heavy rule*

Footnotes — NA Not available. [1] Data are for persons 5 to 34 years of age.

Parallel rule — Source: U.S. Bureau of the Census, *Current Population Reports*, series P-20.

2/ W. A. Wallis and H. V. Roberts, Statistics: A New Approach (New York, N.Y.: Free Press, 1956), pp. 270-277. Their chapter "How to Read a Table" uses an older edition of the Statistical Abstract to illustrate 10 steps in table reading. Although their "new approach" is over 25 years old, it is still timely for today.

for each year. If you followed these instructions and drew lines to separate its parts, then the rules for the spanner and column heads should be similar to figure 2.

FIGURE 2

Field. You are ready to place the 24 cells (4 x 6) of information in the field. The population information to be included in the "total" columns will come directly from figure 3 (or a more recent source). However, the percentages should be calculated after the "totals" are posted. The percentages should be computed by dividing each of the race totals by its corresponding population totals (e.g., 1970 Black population living in SMSA's divided by 1970 total population who live in SMSA's x 100).

Table title. Prepare a table title that is comprehensive and yet to the point. Be sure to refer to the variables displayed in the stub, the spanner, and the column heads, as illustrated in figure 1.

Headnote. Review the information in the headnote of figure 3 (or its equivalent) to determine which of the numerous notes are needed for your new table. You probably should include a unit indicator (e.g., millions). However, will it be necessary to include information regarding the Current Population Survey? Why or why not?

Footnotes. Changes have been made in the original table from the Statistical Abstract to create your new table. Thus, it is important to use for the footnote and the source only information that is relevant to the contents of your table.

Once you are satisfied that the construction of your new table is finished, review its contents. What summary statements can you make regarding the changes that have occurred between the two times?

In the same way that one's description of a sculpture may vary if viewed from the side rather than from the front, the information in a table may be interpeted differently if its contents are reorganized. Using the information compiled in your new table, devise a second table by reversing the location of information: what was in the spanner and column heads should be placed in the stub, and vice versa.

After analyzing these two table formats, do you think that the totals and percentages are easier to read vertically or horizontally? Which table offers the greatest simplicity and clarity? Why? Are there other ways that the information could be presented to help the reader comprehend the changes that have taken place during the 20-year period (e.g., additional derived measures, such as a measure of absolute change or percent change in the total population and Black population)?

FIGURE 3

No. 21. Population, by Metro-Nonmetro Residence and Race: 1950 to 1979

[**In millions, except percent.** Covers 243 standard metropolitan statistical areas (SMSA's) as defined in 1970 census publications. Data for 1950-1970 as of April. Data for 1979 are five-quarter annual averages centered on April from the Current Population Survey; see text, pp. 1-3. Minus sign (-) denotes decrease. See also *Historical Statistics, Colonial Times to 1970*, series A 276-287]

Residence and race	Total resident population							Noninstitutional population		
	1950	1960		1970		Average annual percent change[1]		1970, adjusted[2]	1979	Average annual percent change,[1] 1970-1979[3]
		Total	Per cent	Total	Per cent	1950-1960	1960-1970			
All races	**151.3**	**179.3**	**100.0**	**[4]203.2**	**100.0**	**1.7**	**1.3**	**199.8**	**215.3**	**.8**
SMSA's, total	94.6	119.6	66.7	139.4	68.7	2.3	1.5	137.1	145.4	.7
Central cities	53.7	59.9	33.4	63.8	31.6	1.1	.6	62.9	60.6	-.4
Outside central cities	40.9	59.6	33.3	75.6	37.0	3.8	2.4	74.2	84.8	1.5
Nonmetropolitan areas	56.7	59.7	33.3	63.8	31.4	.5	.7	62.8	69.9	1.2
White	**135.2**	**158.8**	**100.0**	**177.7**	**100.0**	**1.6**	**1.1**	**175.3**	**188.1**	**.7**
SMSA's	85.1	105.8	66.7	120.6	67.8	2.1	1.3	118.9	123.1	.4
Central cities	48.8	49.4	31.1	49.4	27.8	.6	(Z)	48.9	44.8	-1.0
Outside central cities	36.3	56.4	35.5	71.1	40.0	3.8	2.3	70.0	78.3	1.2
Nonmetropolitan areas	50.1	53.0	33.4	57.2	32.2	.7	.8	56.3	63.0	1.2
Black	**15.0**	**18.9**	**100.0**	**22.6**	**100.0**	**2.3**	**1.8**	**22.1**	**25.1**	**1.4**
SMSA's	8.9	12.7	67.5	16.8	74.3	3.6	2.7	16.3	19.1	1.7
Central cities	6.6	9.9	52.3	13.1	58.2	4.1	2.9	12.9	14.1	1.0
Outside central cities	<.2	2.9	15.2	3.6	16.1	2.1	2.4	3.4	5.0	4.1
Nonmetropolitan areas	6.1	6.1	32.5	5.8	25.7	-.1	-.5	5.7	6.0	.5

Z Less than .05 percent. [1] For explanation of average annual percent change, see Guide to Tabular Presentation. [2] 1970 census data adjusted to exclude inmates of institutions and members of the Armed Forces living in barracks and similar types of quarters for comparability with 1979 data from Current Population Survey. [3] See footnote 3, table 1. [4] Totals include corrections and some annexations that are not included in data by race.

Source: U.S. Bureau of the Census, *U.S. Census of Population: 1960* and *1970*, vol. 1; and *Current Population Reports*, series P-20, No. 350.

Activity 3: The Collecting Function

Table 1 summarizes the uniqueness of each of the four basic statistical compendia. The Statistical Abstract stresses detail; the Historical Statistics, time series; the County and City Data Book and the State and Metropolitan Area Data Book, local or smaller area data. The table illustrates that in choosing a compendium, one should weigh the importance of subject verses geographic detail. In addition, these publications vary in the frequency of issue and in the time period for which data are presented. Keep all these factors in mind as you complete the following exercise.

1. James Michener illustrated the importance of the Statistical Abstract by citing several issues that are frequently discussed. Choose one of the following topics or develop one of your own (topic 3).

Topic 1: "For some years I've been worrying about the problems of our cities, and when I was forced to put my vague fears into hard statements, I consulted the Abstract."

Topic 2: "Any novelist has to be concerned about what's happening to the family during the years of his or her writing, and it is inadequate to rely only upon the evidence one sees for oneself. Such evidence is striking and often of profound significance, but a cautious writer dare not generalize from it. Where American families are concerned, the Abstract provides a sound base for speculation."

Topic 3: Create your own statement regarding an issue that deals with a facet of America's population, business, or government.

2. Start your search by reviewing the resources that are available in the Statistical Abstract; then, review each of the other three compendia to determine the extent to which they contain information on this topic for the Nation, your State, and your SMSA. As you search through the table of contents, index, and other user guides within each of these compendia, you will need to watch for key words that may help you to locate the most important tables. In topic 2, for instance, several words come to mind that suggest family problems: divorce rate, income, birth to unmarried mothers, and marital status. List at least five other concepts that are related to American family problems.

3. There are other concepts that need to be considered if this topic is to be researched properly. As an example, what is a family? The introductory information in the population section of the Statistical Abstract provides a precise definition for several concepts. Read the selected definitions in figure 4. Underline key words or phrases therein, and select those terms that seem most crucial to an analysis of the family. Explain your reasoning.

4. Peruse the remaining technical notes to determine if there are other concepts that might be used to solve your problem.

5. Complete worksheet 1 on your chosen topic so that you will be familiar with the range of information that is available within these statistical compendia.

FIGURE 4

Selected Definitions From the Population Section of the Statistical Abstract

Residence.—In determining residence, the Bureau of the Census counts each person as an inhabitant of a usual place of residence (i.e., the place where one usually eats and sleeps). While this place is not necessarily a person's legal residence or voting residence, the use of these different bases of classification should produce the same results in the vast majority of cases.

Living arrangement.—Living arrangements may be in households or in group quarters. A "household" comprises all persons who occupy a "housing unit," that is, a house, an apartment or other group of rooms, or a room that constitutes "separate living quarters." A household includes the related family members and all the unrelated persons, if any, such as lodgers, foster children, wards, or employees who share the housing unit. A person living alone or a group of unrelated persons sharing the same housing unit as partners is also counted as a household. See text, section 28, Construction and Housing, for definition of "housing unit."

All persons not living in households are classified as living in *group quarters*. These individuals may be *institutionalized*, e.g., under care or custody in jails, correctional centers, hospitals, or rest homes; or they may be residents in college dormitories, military barracks, rooming houses, etc. (see table 79)

Householder.—In this edition, the term "householder" is introduced, replacing the terms "head of household" and "head of family." Its use is synonymous with the previously used terms. However, beginning with the reporting of the 1980 census, it will refer to the first adult household member listed on the census questionnaire. This policy contrasts with the Bureau's longtime practice of always classifying the husband as the head in married-couple families.

Family.—The term "family" refers to a group of two or more persons related by blood, marriage, or adoption and residing together in a household. A primary family includes among its members the person or couple who maintains the household. A secondary family comprises two or more persons such as guests, lodgers, or resident employees and their relatives living in a household and related to each other but not to the person or couple who maintains the household.

Subfamily.—A "subfamily" consists of a married couple and their children, if any, or one parent with one or more unmarried children under 18 years old living in a household and related to the person or couple who maintains the household. Members of a subfamily are also members of the primary family with whom they live. The number of subfamilies, therefore, is not included in the number of families.

WORKSHEET 1

Topic: _____

Key words: _____

Geographic Level	Statistical Compendia (list the table number and, if given, the item number[1/]			
	Statistical Abstract (SA)	Historical Statistics (HS)	State and Metropolitan Area Data Book (SMADB)	County and City Data Book (CCBD)
Nation				
State				
SMSA				

1/ The item number is given in the boxhead for the specific statistic (does not apply to the SA).

Which statistical compendium offers, in your opinion, the greatest insight on this topic?

Which table within this volume seems to be the most interesting (provide the table number and its title)?

Why?

Activity 4: The Referral Function

The data that appear in statistical compendia come from many sources. These sources include not only Federal statistical agencies and other organizations that collect and issue statistics as their principal activity, but also governmental administrative and regulatory agencies, private research bodies, trade associations, insurance companies, health associations, and private organizations. For most users, the compendia contain sufficient information so that there is no need to go further. A person can, however, use the text annotations to the data to locate sources of greater detail. This referral aspect serves as the focus for the exercise that follows.

PROBLEM: Develop a bibliography on the topic that you selected in activity 2 with the use of the statistical compendia. This bibliography will help you determine where additional statistics and conceptual information can be locatec for your topic.

1. Start your search by using the resources found in the Statistical Abstract. Each of the table numbers that you listed on worksheet 1 contains referral information in the source notes. Record these citattions for each of the tables on worksheet 2. Record the appropriate table number for the Statistical Abstract in the column headed "SA." In some cases the sources cite the specific publication from which the data come (figure 5, arrow A); in other cases, however, a more general reference is provided (figure 5, arrow B).

Use the information included in the introductory material and in the appendixes to complete your search. Four specific sections should be explored.

a. Peruse the introduction for each of the appropriate sections in the Statistical Abstract to discover more detailed information regarding the basic sources (figure 6).

b. Investigate the headnote for each table (figure 5, arrow C) or appendix 1 (figure 7) of the Statistical Abstract to determine if there is additional information in the Historical Statistics.

c. Information on the statistical methodology and reliability of the major sources is highlighted in appendix 3 of the Statistical Abstract (figure 8). This information will increase your understanding of the utility of each data base. Record any important notes that need to be remembered in the comments section of worksheet 2.

FIGURE 5

Excerpts from the Referral Information Provided in Selected Statistical Abstract Tables

NO. 95. BIRTHS TO UNMARRIED WOMEN, BY RACE AND AGE OF MOTHER: 1950 TO 1978

[Prior to 1980, excludes Alaska and Hawaii. Beginning 1970, excludes births to nonresidents of U.S. Includes estimates for States in which marital status data were not reported. No estimates included for misstatements on birth records or failures to register births. See also Appendix III and *Historical Statistics, Colonial Times to 1970*, series B 28-35] ← C

RACE AND AGE	1960	1965	1966	1968	1970	1973	1974	1975	1976	1977	1978
Total live births (1,000)	141.6	183.3	224.3	291.2	398.7	407.3	418.1	447.9	468.1	518.7	543.9
Percent of all births[1]	4.0	4.5	5.3	7.7	10.7	13.0	13.2	14.2	14.8	15.5	16.3
White (1,000)	53.5	64.2	82.5	123.7	175.1	163.0	168.5	186.4	197.1	220.1	233.6
Black and other (1,000)	88.1	119.2	141.8	167.5	223.6	244.3	249.6	261.6	271.0	295.5	310.2
Percent of total	62.2	65.0	63.2	57.5	56.1	60.0	59.7	58.4	57.9	57.3	57.0
Percent White of all White	-	1.1	-	2.3	-	6.4	-	-	7.7	-	-

[1] For total births, see table 85. [2] Rate per 1,000 unmarried (never married, widowed, and divorced) women aged 15-44 years enumerated as of April 1 for 1950, 1960, and 1970, and estimated as of July 1 for all other years. ← B

Source: U.S. National Center for Health Statistics, *Vital Statistics of the United States*, annual, and unpublished data.

NO. 101. LEGAL ABORTIONS—ESTIMATED NUMBER, RATE, AND RATIO BY RACE: 1972 TO 1978

[Refers to women 15-44 years old at time of abortion. Minus sign (-) denotes decrease]

ITEM	1972		1975		1976		1977		1978	
	White	Black[1]	White	Black[1]	White	Black[1]	White	Black[1]	White	Black[1]
Total women 15-44 yr. old (1,000)	38,381	6,014	40,495	6,833	41,254	6,856	42,022	7,071	42,741	7,298
Number of abortions (1,000)	455.3	131.4	701.2	333.0	784.9	394.4	891.2	429.1	988.4	440.2
Annual rate per [illegible]	[illegible]		15.5	36.3		18.4	13.5		8.8	

X Not applicable. [1] Includes other races. ← A

Source: Alan Guttmacher Institute, New York, N.Y., unpublished data. Includes data from U.S. Bureau of the Census, U.S. National Center for Health Statistics, and U.S. Center for Disease Control, Atlanta, Ga.

FIGURE 5

Excerpt from the Introduction to "Vital Statistics"

This section presents vital statistics—data on births, deaths, abortions, fetal deaths, including stillbirths, fertility, life expectancy, marriages, and divorces. Vital statistics are compiled for the country as a whole by the National Center for Health Statistics (NCHS) and published in its annual report, *Vital Statistics of the United States*; in certain reports of the *Vital and Health Statistics* series; and in the *Monthly Vital Statistics Report*. Reports in this field are also issued by the various State bureaus of vital statistics. Data on fertility, on age of persons at first marriage, and on marital status and marital history are compiled by the Bureau of the Census from its Current Population Survey (CPS, see text, p. 1) and published in *Current Population Reports*, series P-20.

FIGURE 7

Excerpt from Historical Series--Index to Tables in Which Historical Statistics Series Appear

[The most recent historical supplement to the *Statistical Abstract* is the bicentennial edition, *Historical Statistics of the United States, Colonial Times to 1970* (see inside back cover). Listed below are statistical time series identified by number appearing in this edition, for which tables in the *Statistical Abstract* present comparable figures. Historical series are listed only where related or comparable data are available for one or more years later than 1970. In a few instances, it may be necessary to combine figures shown in the *Abstract* to obtain totals comparable to the series shown in *Historical Statistics*]

Historical Statistics series	1980 *Abstract* table number	*Historical Statistics* series	1980 *Abstract* table number	*Historical Statistics* series	1980 *Abstract* table number	*Historical Statistics* series	1980 *Abstract* table number
		D 142-151	692	G 200-204	762		
	85	D 182-232	698	G 205-256	753	H 862-864	413
B 5-7	87	D 233-682	697	G 257-268	767	H 865-870	417
B 11	86	D 689-704	693	G 415-489	733	H 871	413
B 20-27	88	D 802-810	692	G 851-856	212	H 872	417
B 28-35	95	D 814-826	708	G 881-915	211	H 874	413
B 49-86	97	D 877-892	692			H 875-876	414
B 107-115	106	D 913	288	H		H 877	413
B 116-125	107	D 918-919	172			H 878-893	411
B 136-147	114	D 921-926	826	H 1-47	531	H 899-920	426
B 142	85	D 933-934	714	H 51-58	538	H 921-940	426
B 149-160	116	D 946-951	714	H 57-69	541	H 946-951	427
B 163-165	121	D 970-976	718	H 70-110	559	H 952-961	302
B 167-173	110	D 977-1021	720	H 115-124	560	H 971-986	310
	110	D 1155-[illegible]	877	[illegible]	[illegible]		

d. Continue your search by consulting the "guide to sources of statistics" (appendix 4). It is within this activity that specific reference is made to all of the sources that were used to develop the statistical tables (figure 9). If your question necessitates the use of statistics on an individual State, another set of reference materials is presented in "guide to State statistical abstracts" (this "guide" is a subset of appendix 4).

2. Complete worksheet 2 by locating the appropriate bibliographic information for Historical Statistics, the State and Metropolitan Data Book, 1979, and the County and City Data Book, 1977. Their structure is different from that which appears in the Statistical Abstract: citations are organized by chapter in Historical Statistics; in the latter two, they are located in a section entitled "source notes and explanations." In all three cases, you will need to find the table number and then the item number (the number that is unique to each column). This item number will allow you to locate the citation in the reference materials (figure 10).

You are now in a position to search through the library stacks to collect additional statistical data on your designated topic or to conduct bibliographic searches for statistical data should the need arise.

FIGURE 8

Excerpts from "Statistical Methodology and Reliability" (App. 3)

SUBJECT, SOURCE, TITLE, TABLES	UNIVERSE, FREQUENCY, TYPES OF DATA	TYPE OF DATA COLLECTION OPERATION
SECTION 2. VITAL STATISTICS U.S. National Center for Health Statistics *Vital Registration System* See tables 85-92, 95, and 110-121	Annual data on births and deaths in the United States	Mortality data based on complete file of death records, except 1972, based on 50% sample. Natality statistics for most years, 1951-1971, based on 50% sample of birth records received by NCHS. Beginning 1972 data from some States received through Cooperative Health Statistics System and complete file used; data from other States based on 50% sample
(See section 1 above for information pertaining to tables 93, 94, 96-98, 105, and 123-127.)		

DATA COLLECTION AND IMPUTATION PROCEDURES	INFORMATION ON ERRORS IN THE DATA		SOURCES OF ADDITIONAL MATERIAL
	Estimates of sampling error	Other (nonsampling) errors	
Reports based on records from registration offices of all States, District of Columbia, Puerto Rico, Virgin Islands, Guam, and certain cities	For births, CV's are small due to large portion of total file in sample (except for very small estimated total(s))	In 1964-1968, underregistration of births estimate to be 2%. Data on deaths believed to be as complete	U.S. National Center for Health Statistics, *Vital Statistics of the United States, 1978*, vol. I and vol. II, part A and part B, forthcoming

FIGURE 9

Excerpts from "Guide to Sources" (App. 4)

Vital Statistics—*see also* Accidents; *and* Health

U.S. Government

Center for Disease Control
- Abortion Surveillance Report—Legal Abortions. Annual
- Morbidity and Mortality Weekly Report. Annual summary also

National Center for Health Statistics
- Monthly Vital Statistics Report. Provisional Statistics. Annual summary also
- United States Life Tables. 1969-71. Decennial
- Vital and Health Statistics. (A series of statistical reports covering health-related topics.)
  - Series 20. Mortality Data. Irregular
  - Series 21. Natality, Marriage, and Divorce Data. Irregular
  - Series 23. National Survey of Family Growth Statistics. Irregular
- Vital Statistics of the United States. Annual

Other

The Alan Guttmacher Institute, New York
- Abortion Need, Services and Policies Each State. 1979

FIGURE 10

Illustration of Source Note Structure in other Statistical Compendia

VITAL STATISTICS

Items A 142-165. Births—total and rate, by race, selected years, 1960-1977.

Source: U.S. Department of Health, Education, and Welfare, National Center for Health Statistics, *Vital Statistics of the United States*, Vol. I: *Natality*, annual issues.

For explanatory notes, see the general note for items B 94-157. For a discussion of how race is classified, see text for items B 94-118.

A change in coding procedures introduced in 1970, discussed in the general note for items B 94-157, affected the comparability of data with previous years for the State of Texas, since most of the nonresident alien births occurred there.

Source: State and Metropolitan Area Data Book, 1979.

WORKSHEET 2

Topic: _____

Bibliographic Citation	Comments	Reference Table No.			
		SA	HS	SMADB	CCDB

Census Tract Analysis

Many individuals find immensely satisfying the discovery of an area's (and its population's) characteristics through an exploration of statistical data. Others find, however, that the volumes of statistical information are not a substitute for the sensory experiences provided by field exploration. This exercise provides an opportunity to merge these unique perspectives.

Your instructor will ask you to complete the exercise by conducting the field work before collecting the statistical data (option A) or vice versa (option B). If option B is chosen, skip steps 2 and 3 until steps 4 to 8 are completed. In both options you will use the census tract as the basic geographic unit of analysis. Census tract reports are useful to city planners, marketing researchers, and academics because both complete-count and sample-estimate data are available for these small areas, and an attempt is made to preserve comparability from census to census. A worksheet has been provided to use with this exercise.

PROBLEM:

1. Select a census tract by using the map that is included with the census tract report.

2. Travel through your tract so that you can observe the characteristics of the area and its people that you have selected. Worksheet 1 includes a number of items that might be used to characterize this tract. Feel free to include additional items that you believe are needed to capture the uniqueness of the tract.

3. Estimate for each of these characteristics that you have observed whether your tract is above (+) or below (-) the average of all tracts that are located in your county. Record this information in column A of worksheet 1.

4. You are now ready to review the census tract report to become familiar with the types of information that it contains. Turn to table P-1 to examine the organization of the geographic information that is provided in the header.

If the census tract you have chosen has a dashed line running through it, it is called a split tract. This means that a portion of it is included within the central city and another portion (balance) is outside the central city. It is important that you match the exact area that you have chosen on the census tract map with the proper column in each of the census tract tables. As an example, the information for census tract 108 in figure 1 is presented in three places (see arrows) within each table.

5. Locate the population and housing charcteristics in the census tables that are listed on worksheet 1 (column B). Items that are marked with an asterisk (*) cannot be used if 1970 tract reports are used.

6. Record the information for your census tract in column C. In some cases you will need to derive a percentage. Use caution in the selection of denominators when the percentage is needed (e.g., when "female householder, no husband present" is the numerator, "all families," rather than "all persons," is the appropriate denominator).

7. Record the information for the county in column D. Again, use caution when locating a denominator for the derived characteristics.

8. Determine if the value recorded for each selected characteristic of your tract is greater than or less than the value for the county (column E).

9. Compare the information that you recorded in column A with the tract summation that you recorded in column E. Regarding those characteristics for which you recorded a "+" in column A, did you also record a "+" in column E? What are the explanations for any differences? If there is a discrepancy, which column do you feel presents the most accurate information? the most cost-effective information (i.e., if time and money were limited, which source of information would you use?)?

10. Be prepared to answer the following questions regarding your study:

a. What kinds of important characteristics are observable but are not recorded in census data (e.g., presence of commercial development)?

b. What other information or what combinations of data would you like to have regarding this area? Why?

c. Are there any factors that make this area unique (historical, social, geographic, economic, etc.)?

d. Did your feelings about this area distort your observations that were recorded in column A?

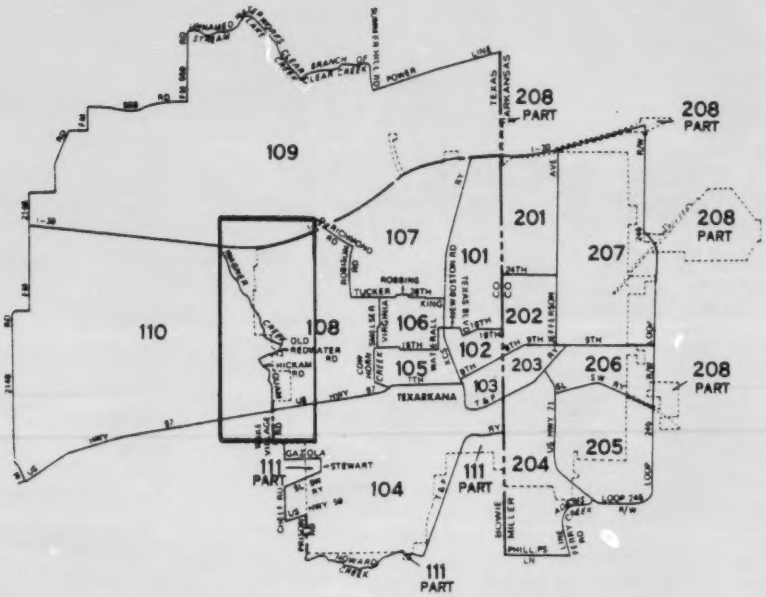
e. What changes seem to be occurring in this area? On what information are you basing this statement?

f. How would you describe this area to people not familiar with it?

3.1

FIGURE 1

CENSUS TRACTS IN THE TEXARKANA, TEX.-ARK. SMSA



Headers for Census Tract Tables: Texarkana, Texas-Arkansas, SMSA

Page 1

	Miller County, Ark.			Bowie County, Tex.			Texarkana, Ark.				
Total SMSA	Total	Tex-arkana	Balance	Total	Tex-arkana	Balance	Tract 0201	Tract 0202	Tract 0203	Tract 0204	Tract 0205

Page 2

Texarkana, Ark. – Con.			Balance of Miller County, Ark.							
Tract 0206	Tract 0207	Tract 0208	Tract 0201	Tract 0204	Tract 0205	Tract 0206	Tract 0207	Tract 0208	Tract 0209	Tract 0210

Page 3

Texarkana, Tex.										Balance of Bowie County, Tex.		
Tract 0101	Tract 0102	Tract 0103	Tract 0104	Tract 0105	Tract 0106	Tract 0107	Tract 0108	Tract 0109	Tract 0111	Tract 0104	Tract 0108	Tract 0109

Page 4

Balance of Bowie County, Tex. – Con.								Totals for split tracts in Bowie County, Tex.			
Tract 0110	Tract 0111	Tract 0112	Tract 0113	Tract 0114	Tract 0115	Tract 0116	Tract 0117	Tract 0104	Tract 0108	Tract 0109	Tract 0111

47

WORKSHEET 1

Comparison of Field Observation and Census Data for Tract #____

Characteristic	Field Observation (+) or (-)[1/] (A)	Census Data			Census Summation (+) or (-)[1/] (E)
		Table No. (B)	Tract (C)	County (D)	
Population					
Total population (N=)					
Black (%)					
Persons of Spanish Origin (%)*					
Persons 65 years and over (%)					
Female householder, no husband present (%) *					
High school graduates (%)					
Persons 5 years old and over living in same house as 5 years ago (%)					
Median family income					
Housing					
Occupied housing units (N=)					
One-person households (%)					
Median number of rooms					
Median value, owner-occupied					
Median contract rent					
Year-round housing units built in the preceding 10 years (%)					
Housing units with no automobile available (%)					
Median monthly payments for real estate taxes, property insurance, utilities, fuels, water, and mortgage *					

* These are new items for 1980.

[1/] (+) = above county average; (-) = below county average.

3.2

Windshield Stratification Survey

"Windshield surveys" are conducted by collecting data while traveling through the study area in an automobile. Although this strategy has several disadvantages, one can observe selected social and physical characteristics of a large area within a short period of time. This exercise uses the windshield survey method so that one can (1) become familiar with the spatial distribution of social characteristics of the population, and (2) observe the degree to which conclusions drawn from casual observation may differ from conclusions based on statistical data.

PROBLEM: 1. Using a local street map, outline two routes for a field trip that would start at the central business district (downtown area) and proceed to the periphery of the area in opposite directions. In the event that you live in a rather large metropolitan area, you should plan a trip that will proceed to the periphery of the area in only one direction. Choose routes that would approximate a straight line and that would permit a rather leisurely trip through several neighborhoods. Try to avoid using major thoroughfares because the predominance of commercial activities along these routes tends to hide the unique characteristics of many neighborhoods.

2. Draw the routes that you have selected on the census tract map for your SMSA. The fact that census tract boundaries follow physical features (e.g., rivers, streets) will help you transfer the information from the street map to the census tract map (figure 1).

3. List the numbers of the census tracts that are located along your route in column 1 of worksheet 1. These numbers should be listed in geographic sequence beginning with the census tract that contains the central business district (e.g., 15, 14, 13, 22, 23, 24,.....) rather than in numeric sequence (e.g., 13, 14, 15, 22, 23, 24....). If your trip takes you through a split census tract (e.g., a portion of tract 12 in figure 1 is included inside the central city and another portion is outside), record both numbers on the worksheet. Label the portion inside the central city with the tract number followed by the word "central city" and the remaining portion with the tract number followed by the word "balance."

4. Estimate the distance from the central business district to the midpoint of each census tract using the scale provided on the tract map. Record this information in column 2.

5. Study the tables that are included in the census tract report to select two variables that represent valued attributes (e.g., occupational prestige) and that vary along a continuous scale (e.g., median income, percent in professional or managerial occupation). Variables of this type are sometimes referred to as "social stratification variables." Record the appropriate values in columns 3 and 4 for each of the census tracts listed in column 1.

6. Determine one physical attribute (e.g., housing characteristics, street conditions) and one lifestyle characteristic of the residents that you believe are related to the variables selected in step 5 and would be readily observable during the trip through an area. List your choices at the top of columns 5 and 6. Ascertain prior to your trip whether these direct observation variables will be recorded as word descriptions (e.g., predominately apartments, single-family detached housing units) or as numerical values (e.g., 1 = good, 10 = bad).

7. Travel through the census tracts you have chosen to observe the physical attributes and lifestyle characteristics of the residents. Record this information in columns 5 and 6.

8. After returning, write the answers to the following questions.

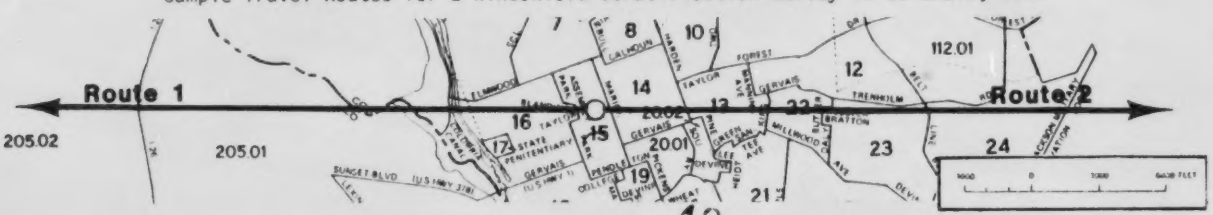
a. Were there variations that you were surprised to find between the census variables and the direct observation variables? If so, why? To what extent might differences between the two data sources represent change over time?

b. How are the variables you selected related to the distance from the central business district? (Show in a series of scattergrams or tables.)

c. Did the areas you traversed seem to be patterned according to any of the theories proposed by human ecologists (e.g., Burgess, Hoyt, and Harris & Ullman)? Discuss.

FIGURE 1

Sample Travel Routes for a Windshield Stratification Survey in Columbia, S.C.



WORKSHEET 1

Data Collection Sheet for Windshield Stratification
Survey for _____(SMSA)

Census Tract Number (1)	Distance from CBD (x 1000 ft) (2)	Census Variables (3) _____	Census Variables (4) _____	Direct Observation Variables (5) _____ (physical attribute)	Direct Observation Variables (6) _____ (lifestyle attribute)

3.3

Perspectives on Poverty

Poverty is not easily defined. Individuals who are interested in the characteristics of persons who are poor or who are interested in the location of poverty areas must search for surrogate measures to quantify this concept. Some find that their needs are served with the use of field observations; others search for answers in statistical reports. This exercise combines these two approaches so that you will gain a better understanding of the relationships between what you see as a result of field observation and what you find in statistical reports.

PROBLEM:

1. Examine the census tract report for your area to determine the range of information that might be brought to bear to define a poverty area. Be certain to examine both the population and housing information.

2. Choose for study one tract with a high incidence of poverty. Be prepared to defend the measure you pick to define a poverty area.

3. Using the census tract map that is provided with the report, determine the boundaries for the tract. What marks the limits of the poverty census tract on all sides? What types of physical or political features form the boundaries for the area? Is it always easy to define the boundaries? If not, how do the characteristics of this tract differ from those of the adjacent tract into which poverty continues?

4. Ride slowly around that area and notice the following: its general location (e.g., around downtown or along railroad tracts), the characteristics of the road network within it (e.g., clean, repaired), the land use along the roads, the types of people observed on the street, and the condition of the housing.

5. Draw a map of the area showing the general location of the features, the road network, the variations in land use (e.g., commercial use, parks, single-family homes, apartment buildings), and the condition of the housing. NOTE: do not try to locate every building, but mark the areas in general.

6. Write some thoughtful paragraphs explaining what you find in poverty areas that you do not see in other areas in town and what you expect to find elsewhere in the city but do not find in a poverty area. Use both your field experience and the census tract data as a basis for your statements.

SUGGESTIONS FOR FUTURE WORK:

1. Poverty status is so complex to define that several variables are frequently combined to form a poverty status index. Develop an operational definition for poverty status using two or more of the items available in the census reports. Poverty status is a "derived variable" (i.e., it is found by combining two or more variables); it is in the census reports because Federal agencies need one standardized measure of this concept. The index takes into account such factors as family size, sex of the family head, number of children under 18 years old, and farm and nonfarm residence. How many of these factors are included in your definition? Examine table A for its portrayal of the interaction of such variables as they relate to poverty levels. Note that income levels shown are 1969 incomes reported in the 1970 census. Thresholds for 1979 income (1980 census) are about twice as high because of inflation.

2. One of the interesting measures provided in the census reports is "ratio of family income to poverty level." Prepare for each of two selected census tracts two graphs, one cumulative and one noncumulative, that show the ratio data for this variable. Use a solid line (-) for one census tract and a dashed line (---) for the other line. Write a paragraph to describe what each of the graphs on worksheet 1 shows.

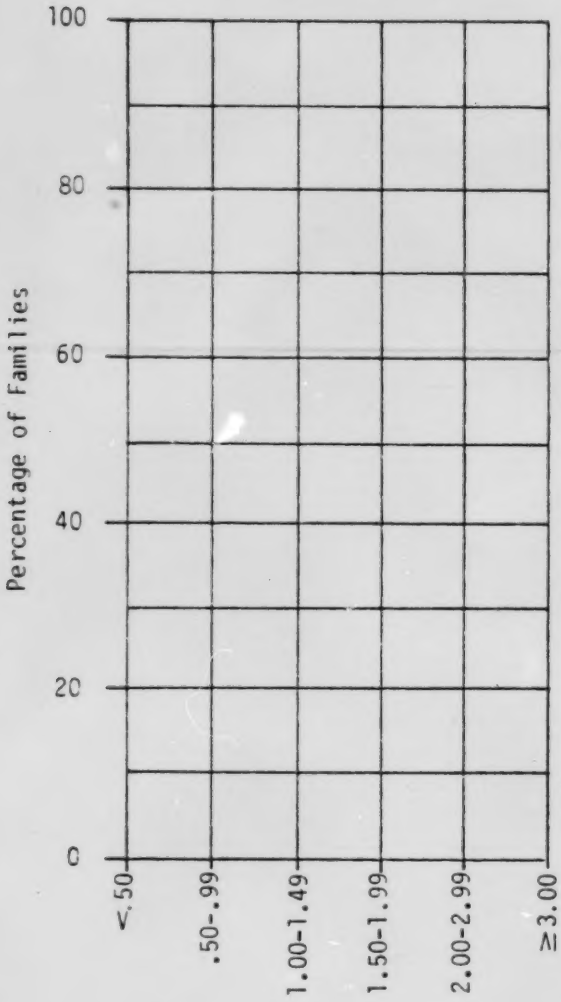
TABLE A. Weighted Average Thresholds at the Poverty Level in 1969, by Size of Family Unit and Sex of Head, by Farm and Nonfarm Residence

Size of family unit	Total	Nonfarm			Farm		
		Total	Male head	Female head	Total	Male head	Female head
All unrelated individuals	$1,834	$1,840	$1,923	$1,792	$1,569	$1,607	$1,512
Under 65 years	1,888	1,893	1,974	1,826	1,641	1,678	1,552
65 years and over	1,749	1,757	1,773	1,751	1,495	1,508	1,487
All families	3,388	3,410	3,451	3,082	2,954	2,965	2,757
2 persons	2,364	2,363	2,394	2,320	2,012	2,017	1,931
Head under 65 years	2,441	2,458	2,473	2,373	2,093	2,100	1,984
Head 65 years and over	2,194	2,205	2,217	2,202	1,882	1,883	1,861
3 persons	2,905	2,924	2,937	2,830	2,480	2,485	2,395
4 persons	3,721	3,743	3,745	3,725	3,195	3,197	3,159
5 persons	4,366	4,415	4,418	4,377	3,769	3,770	3,761
6 persons	4,921	4,958	4,962	4,917	4,244	4,245	4,205
7 or more persons	6,034	6,107	6,116	5,952	5,182	5,185	5,129

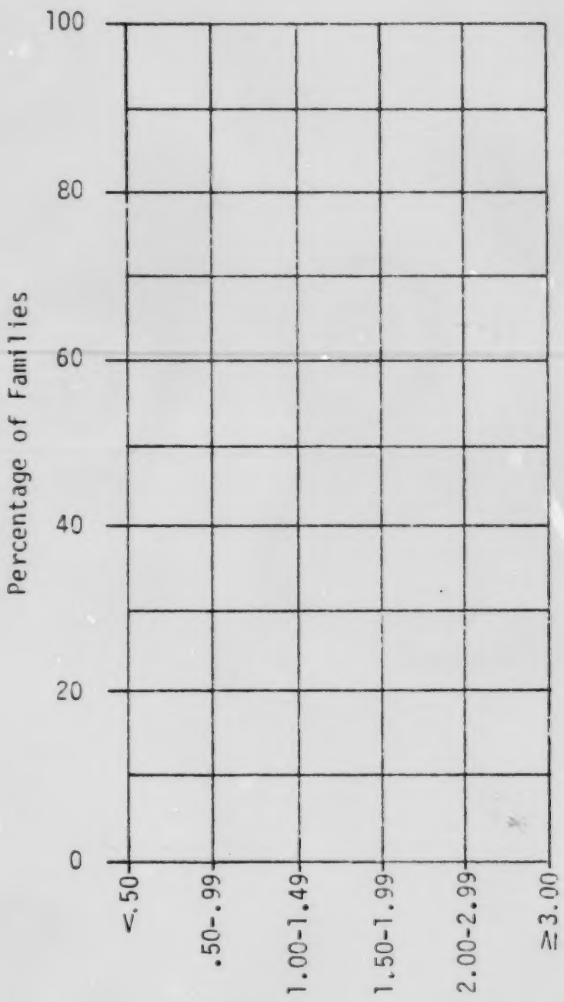
WORKSHEET 1

Ratio of Family Income to Poverty Level for Selected Census Tracts in _____

Noncumulative



Cumulative



———— Census Tract #_____

--------- Census Tract #_____

Summary: _____

_____

_____

_____

4.1

Measures of Population Growth

Dateline: Recently released figures show that Boomtown has grown by 56 percent. Few issues become as controversial as population change. How much has the population grown? Should growth be limited? Should it be encouraged? In what ways will we be able to house and provide services to accommodate the increase in population? Has the population declined? Is the decrease due to outmigration or mortality? What can be done to reverse this decline? This exercise examines ways of measuring population growth or decline and, by so doing, will help you develop a more critical perspective in the choice of population change measurements.

PROBLEM:

1. You have been asked to prepare a press release to highlight the population growth trends in the Washington, D.C., SMSA (see map 1). Your supervisor has given you a table to use as a basis for the release.

   a. Examine the table (each group should receive one table (1, 2, 3, or 4)). Which areas are the largest? the smallest? Which areas have experienced the greatest growth or decline? In what ways are they similar? (For example, are the areas with the most population growing more rapidly than other areas; are the inner city areas experiencing growth or decline?)

   b. List the ways you would use this information in different professions.

   c. Prepare a press release to summarize the findings that can be gleaned from the table. Try to organize the information in the release in a manner that would catch the reader's attention by placing the most important information in the headline and in the first paragraph. Your release should illustrate selected examples of the importance of this information to your readers (e.g., need for services, marketing potential).

   d. Prepare an illustration to accompany your press release. Maps, bar graphs, and pie charts are frequently used in newspapers. A title and proper labels should accompany this illustration so that the reader will not become confused.

2. The press releases that were developed for the first part of this exercise demonstrate that population growth (or decline) can be analyzed in several different ways. By completing worksheet 1, you will be able to determine the characteristics of population growth for the Washington, D.C., SMSA between 1970 and 1980.

   a. Calculate for each of the areas within this SMSA the four population growth measures--numerical change, percentage change, percentage of total population, and index of population change.

   b. Examine each of the columns to discover which geographic areas had the largest and smallest values. You may find that the patterns will become more apparent if the areas with the largest change are marked with a star and those with the smallest change are highlighted with a circle. You should then look for patterns among the columns. As an example, is the area with the largest increase as measured by "numerical change" also the one with the greatest "percent change"?

   c. Each of the four measures provides unique insights into the patterns of population growth. Cite some uses for each of these measures.

   d. Virginia is one of 5 States (the others are Georgia, Maryland, Missouri, and Nevada) that contain cities independent of any county organization. As such, they are treated as county equivalents. Using the map for the Washington, D.C., SMSA, reorganize the listing of political units for the Virginia portion of the SMSA to reflect one method of presenting statistical data that could be used if the State of Virginia did not contain independent cities.

3. Prepare a press release for your area using information from the 1980 census.

   a. Collect information for your county or SMSA with the use of 1980 census reports (check with your local planning agency to obtain these data if they are not available from the university library). Two of the 1980 reports include 1970 population counts for each of the geographic areas presented: PHC80-V (final population and housing unit counts) and PC80-1-A (number of inhabitants).

   b. Complete worksheet 2 by calculating each of the measures listed. As a result of the first activity, you are in a position to appreciate the fact that population growth (or decline) can be measured in several ways and why the choice of measures is important.

   c. Determine which of the measures you have calculated would be most useful in the development of the new press release. Refer to instruction 2b to help you determine these patterns.

   d. Write your new press release and prepare a suitable illustration by referring to the guidelines provided in items 1c and 1d. Try to incorporate in the press release as many of the measures of population change as possible so that you present a balanced perspective to your readers.

   e. Present the press release to the class and be prepared to defend the choice of measures that you decided to include.

TABLE 1

Population Growth for the Washington, D.C., SMSA: 1970-1980

Political Unit	Total Population		Numerical Change (a-b)
	1980 a	1970 b	
D.C.	637,651	756,668	-119,017
Maryland	1,316,875	1,232,206	+84,669
Montgomery Co.	579,053	522,809	+56,244
Prince Georges Co.	665,071	661,719	+3,352
Charles Co.	72,751	47,678	+25,073
Virginia	1,105,714	937,245	+168,469
Arlington Co.	152,599	174,284	-21,685
Alexandria City	103,217	110,927	-7,710
Falls Church City	9,515	10,772	-1,257
Fairfax City	19,390	22,727	-3,337
Fairfax Co.	596,901	454,275	+142,626
Loudoun Co.	57,427	37,150	+20,277
Prince William Co.	144,703	111,102	+33,601
Manassas Park City	6,524	6,844	-320
Manassas City	15,438	9,164	+6,274
Total	3,060,240	2,926,119	(134,121)

TABLE 2

Population Growth for the Washington, D.C., SMSA: 1970-1980

Political Unit	Total Population		Percentage Change $\frac{(a-b)}{b}$
	1980 a	1970 b	
D.C.	637,651	756,668	-15.7
Maryland	1,316,875	1,232,206	6.9
Montgomery Co.	579,053	522,809	10.8
Prince Georges Co.	665,071	661,719	.5
Charles Co.	72,751	47,678	52.6
Virginia	1,105,714	937,245	18.0
Arlington Co.	152,599	174,284	-12.4
Alexandria City	103,217	110,927	-7.0
Falls Church City	9,515	10,772	-11.7
Fairfax City	19,390	22,727	-14.7
Fairfax Co.	596,901	454,275	31.4
Loudoun Co.	57,427	37,150	54.6
Prince William Co.	144,703	111,102	30.2
Manassas Park City	6,524	6,844	-4.7
Manassas City	15,438	9,164	68.5
Total	3,060,240	2,926,119	4.6

TABLE 3

Population Growth for the Washington, D.C., SMSA: 1970-1980

Political Unit	Total Population		Percentage of Total Population	
	1980 a	1970 b	1980 $\left(\frac{a}{\Sigma a}\right)$	1970 $\left(\frac{b}{\Sigma b}\right)$
D.C.	637,651	756,668	20.8	25.8
Maryland	1,316,875	1,232,206	43.3	42.1
Montgomery Co.	579,053	522,809	18.9	17.9
Prince Georges Co.	665,071	661,719	21.7	22.6
Charles Co.	72,751	47,678	2.4	1.6
Virginia	1,105,714	937,245	36.1	32.0
Arlington Co.	152,599	174,284	5.0	6.0
Alexandria City	103,217	110,927	3.4	3.8
Falls Church City	9,515	10,772	.3	.4
Fairfax City	19,390	22,727	.6	.8
Fairfax Co.	596,901	454,275	20.0	15.5
Loudoun Co.	57,427	37,150	1.9	1.3
Prince William Co.	144,703	111,102	4.7	3.8
Manassas Park City	6,524	6,844	.2	.2
Manassas City	15,438	9,164	.5	.3
Total	3,060,240	2,926,119		

TABLE 4

Population Growth for the Washington, D.C., SMSA: 1970-1980

Political Unit	Total Population		Index of Population Change[1] $\left(\frac{\frac{a}{\Sigma a}}{\frac{b}{\Sigma b}}\right)$
	1980 a	1970 b	
D.C.	637,651	756,668	.80
Maryland	1,316,875	1,232,206	1.02
Montgomery Co.	579,053	522,809	1.06
Prince Georges Co.	665,071	661,719	.96
Charles Co.	72,751	47,678	1.46
Virginia	1,105,714	937,245	1.13
Arlington	152,599	174,284	.84
Alexandria City	103,217	110,927	.89
Falls Church City	9,515	10,772	.84
Fairfax City	19,390	22,727	.82
Fairfax Co.	596,901	454,275	1.26
Loudoun Co.	57,427	37,150	1.48
Prince William Co.	144,703	111,102	1.24
Manassas Park City	6,524	6,844	.91
Manassas City	15,438	9,164	1.61
Total	3,060,240	2,926,119	1.00

[1]Population growth within a subunit (e.g., county) that has not kept up with the unit's (e.g., SMSA) percentage of growth will have an index less than 1.00; however, those areas that have experienced a percentage increase that exceeds that of the unit will have an index greater than 1.00.

SUGGESTIONS FOR FURTHER WORK:

1. Articles on the findings from the 1980 census have been published in several newspapers to highlight such issues as growth trends, population shifts, and racial and ethnic patterns. These articles have reported the trends for States, counties, places, and other geographic areas with which people identify. Locate examples of these articles in local newspapers so that your press release can be compared with those that have appeared in print.

2. Official press releases are distributed to newspapers and other media whenever the results of a survey or census are published. Those releases are available from the Public Information Office, Bureau of the Census, Washington, D.C. 20233. Write to this office to receive sample releases for your State.

3. Whereas the U.S. population increased over 11 percent between 1970 and 1980, the housing stock increased almost 29 percent. Using the housing information from the 1980 census and worksheet 2, prepare a press release to highlight the changes that have occurred in the housing inventory during the last 10 years within your area.

4. It is also useful to investigate population growth in terms of the characteristics of the area. Are urban areas growing more rapidly than rural areas? What about the growth characteristics of areas located inside the central cities as opposed to those located within the urban fringe? Does the size of the place help to explain the patterns of population growth? These questions can be answered by preparing another table (use the worksheet 1 format to record the population figures for each area). Locate the PC80-1A (number of inhabitants--table 7) for your State. If this volume is not available, prepare a similar table for 1970 and 1960 for your State by using table 2 from the PC(1)-A (number of inhabitants). The 1970 characteristics of the population volume for each State is light green and contains chapters B, C, and D, as well as chapter A (number of inhabitants). Information for the State of Kansas in 1970 is presented below in the event that neither the 1980 nor the 1970 volume is available (table 5).

Prepare a press release from the information you have gathered and analyzed to highlight the characteristics of population growth for your State. Remember to represent properly the data that you have analyzed. For instance, a place can change size categories or from a "rural" place to an "urban" place (2,499 in 1970 to 2,500 in 1980) with the addition of only one resident. Also, in 1970 a place of 75,985 in Kansas that was located in the urban fringe was not there in 1960. This sudden appearance does not mean that it grew from nothing to this population size in 10 years; rather, the place was probably in the next smaller size class (25,000 to 75,000) in 1960. Accordingly, your press release should discuss the growth or decline in various categories without reference to specific cities or towns.

The following list of geographic categories should provide sufficient insights so that the growth patterns for your State can be determined:

The State
- Urban
  - Inside urbanized area
    - Central cities
    - Urban fringe
  - Outside urbanized areas
- Rural
  - Places of 1,000 to 2,500
  - Places less than 1,000
  - Other rural

TABLE 5

Excerpt from "Population by Size of Place: 1970 and 1960" (table 2) for Kansas

Urban and Rural	1970[1]				1960			
	Places	Population[2]	Percent of total population	Percent distribution	Places	Population	Percent of total population	Percent distribution
The State	632	2,248,378	100.0	...	618	2,178,611	100.0	...
URBAN								
Total	100	1,484,870	66.1	100.0	94	1,328,741	61.0	100.0
Inside urbanized areas	50	785,933	35.0	52.9	19	684,924	31.4	51.5
Central cities	2	401,168	17.9	27.0	2	378,183	17.3	28.3
Urban fringe	18	384,765	17.1	25.9	17	310,742	14.3	23.4
Outside urbanized areas	80	698,937	31.1	47.1	75	613,817	29.6	46.5
RURAL								
Total	532	761,708	33.9	100.0	524	849,870	39.0	100.0
Places of 1,000 to 2,500	95	154,871	6.9	20.3	90	144,631	6.6	17.0
Places less than 1,000	437	145,571	6.5	19.1	434	148,798	6.8	17.5
Other rural[3]	...	461,518	20.5	60.6	...	556,441	25.5	65.5

[1] In 1970, portions of certain cities are classified as rural, the size classification in this table is based on the total population within legal boundaries. See section on "Extended Cities" in text. [2] Figures for items under "Urban" and "Urbanized areas" exclude the population classified as rural within extended cities. [3] Figures for 1970 include population classified as rural within extended cities.

MAP 1

Washington, D.C., SMSA

Source: County and City Data Book, 1977.

WORKSHEET 1

Selected Measures of Population Growth for the Washington, D.C., SMSA (State): 1970-1980.

Political Unit	Total Population		Numerical Change	Percentage Change	Percentage of Total Population		Index of Population Change[1]
	1980 a	1970 b	(a-b)	$\frac{(a-b)}{b}$	1980 $\left(\frac{a}{\Sigma a}\right)$	1970 $\left(\frac{b}{\Sigma b}\right)$	$\left(\frac{\frac{a}{\Sigma a}}{\frac{b}{\Sigma b}}\right)$
District of Columbia	637,651	756,668	-119,017	-15.7	20.8	25.8	.80
Maryland	1,316,875	1,232,206					
Montgomery Co.	579,053	522,809					
Prince Georges Co.	665,071	661,719					
Charles Co.	72,751	47,678					
Virginia	1,105,714	937,245					
Arlington	152,599	174,284					
Alexandria City	103,217	110,927					
Falls Church City	9,515	10,772					
Fairfax City	19,390	22,727					
Fairfax Co.	596,901	454,275					
Loudoun Co.	57,427	37,150					
Prince William Co.	144,703	111,102					
Manassas Park City	6,524	6,844					
Manassas City	15,438	9,164					
Total	3,060,240	2,926,119					

[1]Population growth within a subunit (e.g., county) that has not kept up with the unit's (e.g., SMSA) percentage of growth will have an index less than 1.00; however, those areas that have experienced a percentage increase that exceeds that of the unit will have an index greater than 1.00.

WORKSHEET 2

Selected Measures of Population Growth for _____ (State): 1970-1980.

Political Unit	Total Population		Numerical Change	Percentage Change	Percentage of Total Population		Index of Population Change[1]
	1980 a	1970 b	$(a-b)$	$\frac{(a-b)}{b}$	1980 $\left(\frac{a}{\Sigma a}\right)$	1970 $\left(\frac{b}{\Sigma b}\right)$	$\left(\frac{\frac{a}{\Sigma a}}{\frac{b}{\Sigma b}}\right)$

[1]Population growth within a subunit (e.g., county) that has not kept up with the unit's (e.g., SMSA) percentage of growth will have an index less than 1.00; however, those areas that have experienced a percentage increase that exceeds that of the unit will have an index greater than 1.00.

Some Basic Demographic Measures

No population census worthy of the name would fail to collect data on such basic characteristics as age or sex. Proper analysis of population structure and change can hardly be accomplished without the use of these variables. Moreover, to analyze many of the characteristics tabulated in a population census, one must employ age and sex as independent variables. This set of exercises introduces a series of summary measures that are used in many population studies.

PROBLEM: Read the following description of basic demographic measures and complete the tables as instructed. Portions of tables from the 1970 and 1980 censuses (see pp. 39, 43-45) have been included in the event that you cannot find the needed reference materials in the library. If your instructor requests that you use these tables, worksheets, 3-4, 7, and 8 cannot be completed. If, on the other hand, your instructor asks you to use the library's resources, use the following chart (table 1) to locate the appropriate table in the reference materials. You may choose to complete the exercise with the use of 1970 census information for either the United States or your State. If the 1980 publications are available, however, use this information.

As a result of completing this exercise, you will be able to use a variety of measures that can be calculated with age and sex data to describe and analyze several population problems in the public and private sectors. This activity can be greatly enhanced if the following guidelines are followed.

- State in your own words what information is being sought and what type of patterns or trends you expect to find.
- Take extra precautions to choose the most appropriate data items. The information that the tables provide in the title, stubs, boxheads, and footnotes must be studied carefully to avoid embarrassing and costly mistakes.
- Examine the information that you have found to determine if modifications are needed in the design of your table. That is, will you need to change the stubs, create a footnote to explain an item that is not clear, or make some other modifications?
- Record the data items on your worksheet and perform the necessary calculations.
- Review the worksheet to check for patterns, trends, and/or anomalies. This phase should be used for two purposes: to test your hypotheses, notions, etc., about the data and to identify potential calculation mistakes.

The measures of age and sex that appear on the following pages are only a few of the tools used by demographers. The Methods and Materials of Demography (by Henry S. Shryock, Jacob S. Siegel, and Associates), published by the Bureau of the Census, was used as a basis for this exercise. It should be examined if a more detailed presentation of these and other demographic measures is needed.

TABLE 1

Suggested Tables for Use With the Demographic Measures Exercise

Worksheet	Title	1970 (PC(1) -B & -C)		1980 (PC80(1) -B & -C)	
		U.S. Summary	State	U.S. Summary	State
1	Sex Ratios by Race	48	17	41	17
2	Sex Ratios by Age Groups	52	20	44	19
3	Sex Ratios by Selected Geographic Areas	55	35[1]/	54	45[1]/
4	Sex Ratios for Selected Socioeconomic Characteristics	54,75,103	22,51,66	60,84,106	21,64,67
5	Distribution of Population by Age Group	53	21	46	20
6	Percentage of Change by Age Group	53	21	46	20
7	Calculations for Age Specific Indexes	57	35[1]/	55	45[1]/
8	Age Specific Indexes	57	35[1]/	55	45[1]/
9	Dependency Ratios for the United States	53	21	46	20
10	Calculations for Population Pyramid	52	20	44	19
11	Population Pyramid	52	20	44	19

1/ Use selected counties for the State instead of regions.

A. Sex Ratio

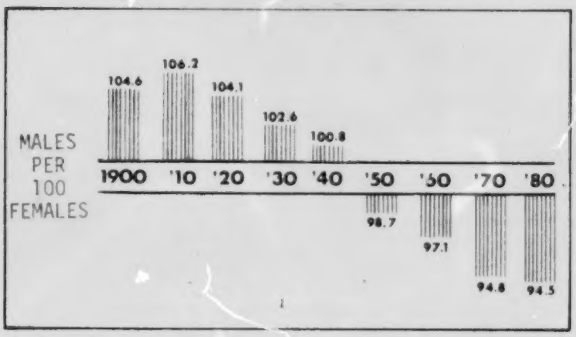
The sex ratio is the principal measure of sex composition used in technical studies. It is defined as the number of males per 100 females, or

$$\frac{\text{number of males}}{\text{number of females}} \times 100$$

When there are equal numbers of males and females, the sex ratio is 100. When there are more males than females, the sex ratio is greater than 100 and is called a high sex ratio. Conversely, if there are more females than males, the sex ratio is less than 100 (a low sex ratio). An interesting anomalie is the fact that, although at birth there are more males than females in the United States, in the older age group there are more females than males.

FIGURE 1

United States Sex Ratio: 1900 to 1980



1. As demonstrated in figure 1, the sex ratio has decreased at a rather steady rate since 1910. Complete worksheets 1-3 to discover the variations in sex ratios that are apparent among racial, age, and regional groupings. Develop a set of summary statements to highlight the ways that this measure varies from place to place, time to time, and group to group.

2. Although the sex ratio has its origins within demographic analysis, its utility as a basic numerator/denominator measure can be illustrated by completing worksheet 4. Two words of caution are needed when you use information on sex from census reports:

- Are the data for males and females comparable (e.g., same occupation groups)? This is particularly important when using 1970 census data.

- Are the data presented for males and females, total and males, or total and females? In some cases you will need to find one of the categories by subtracting from the totals (e.g., to calculate the number of "female" employed persons in table 103 of 1970 PC(1)-C (United States summary), you must subtract "males" from the "total").

Population Counts by Age, Race and Sex: 1980 (Provisional)

** UNITED STATES 02/27/81

	ALL RACES			WHITE			BLACK			OTHER RACES		
	BOTH SEXES	MALE	FEMALE	BOTH SEXES	MALE	FEMALE	BOTH SEXES	MALE	FEMALE	BOTH SEXES	MALE	FEMALE
TOTAL.....	226504825110032295116472530			188340790	91669626	96671164	26488218	12515932	13972286	11675817	5846737	5829080
UNDER 5 YEARS OLD	16344407	8360135	7984272	12631197	6482766	6148431	2435915	1227692	1208223	1277293	649677	627618
5 TO 9 YEARS OLD	16697134	8537903	8159231	13031017	6684406	6346611	2489947	1255012	1234935	1176170	598485	577685
10 TO 14 YEARS OLD	18240919	9315055	8925864	14460283	7407610	7052673	2672908	1343975	1328933	1107728	563470	544258
15 TO 19 YEARS OLD	21161667	10751544	10410123	16957541	8631389	8326152	2983440	1488264	1495176	1220686	631891	588795
20 TO 24 YEARS OLD	21312557	10660063	10652494	17283385	8680290	8603095	2724355	1300122	1424233	1304817	679651	625166
25 TO 29 YEARS OLD	19517672	9703259	9814413	15902645	8004161	7898484	2320620	1084051	1236569	1214407	615047	599360
30 TO 34 YEARS OLD	17557957	8675505	8882452	14442683	7298693	7344080	1888272	870925	1017347	1027002	505977	521025
35 TO 39 YEARS OLD	13963008	6860236	7102772	11759232	5830238	5928994	1457494	662089	795405	746282	367909	378373
40 TO 44 YEARS OLD	11668239	5707550	5960689	9825135	4849123	4976012	1250924	566462	684462	592180	291965	300215
45 TO 49 YEARS OLD	11088363	5387511	5700872	9455959	4638090	4817869	1142589	515140	627449	489835	234281	255554
50 TO 54 YEARS OLD	11708984	5620474	6088510	10156895	4918050	5238045	1128593	504361	624232	423496	198063	225433
55 TO 59 YEARS OLD	11614054	5481152	6132902	10236808	4852081	5384727	1036601	466477	570124	340645	162594	178051
60 TO 64 YEARS OLD	10085711	4669307	5416404	8973977	4172521	4801456	870734	385105	485629	241000	111681	129319
65 TO 69 YEARS OLD	8780844	3902083	4878761	7811071	3481097	4329974	776597	331484	445113	193176	89502	103674
70 TO 74 YEARS OLD	6796742	2853116	3943626	6094178	2551944	3542234	563377	234277	329100	139187	66895	72292
75 TO 79 YEARS OLD	4792597	1847115	2945482	4309286	1649900	2659386	387231	152666	234565	96080	44549	51531
80 TO 84 YEARS OLD	2934229	1018859	1915370	2684793	923048	1761745	199760	74850	124910	49676	20961	28715
85 YEARS OR OLDER.	2239721	681428	1558293	2044705	614309	1430396	158861	52980	105881	36155	14139	22016
UNDER 15 YEARS OLD	51282460	26213093	25069367	40122497	20574782	19547715	7598770	3826679	3772091	3561193	1811632	1749561
15 TO 64 YEARS OLD	149678232	73516601	76161631	125274260	61874546	63399714	16803622	7842996	8960626	7600350	3799059	3801291
65 YEARS OR OLDER	25544133	10302601	15241532	22944033	9220298	13723735	2085826	846257	1239569	514274	236046	278228

B. Measures of Age Structure

Researchers in many fields have a special interest in the age structure of a population since social relationships within a community are considerably affected by the relative numbers at each age. Age is a significant variable in measuring such concepts as potential school population and manpower in the United States. It is also the most important variable in the study of mortality and fertility and in certain other areas of demographic analysis. Acknowledging such importance, this section will provide a number of numerator/denominator measurement techniques that can be used with age data.

1. The most widely used measure for an age distribution is the "median." Median age is a measure of central tendency that may be defined as the age that divides the population into two equal-size groups, one of which is younger, and the other older. When the median age rises, the population is aging, and when it falls, the population is becoming younger.

Because this statistic is included with almost all of the age distributions in census publications, you have not been asked to calculate it. You are to interpret the median age of persons in the United States from 1820 to 1980 using table 2. Include in your interpretation a discussion of the factors that account for the rise in the median age prior to 1950 and its fluctuations between 1950 and 1980.

TABLE 2

Population, by Sex, Race, and Median Age:

1790 to 1980

DATE	SEX		RACE				MEDIAN AGE (years)		
				Black					
	Male	Female	White	Number	Per cent	Other	All races	White	Black
CONTERMINOUS U.S. [1]									
1790 (Aug. 2)	(NA)	(NA)	3 172	757	19.3	(NA)	(NA)	(NA)	(NA)
1800 (Aug. 4)	(NA)	(NA)	4 306	1 002	18.9	(NA)	(NA)	16.0	(NA)
1810 (Aug. 6)	(NA)	(NA)	5 862	1 378	19.0	(NA)	(NA)	16.0	(NA)
1820 (Aug. 7)	4 897	4 742	7 867	1 772	18.4	(NA)	16.7	16.5	17.2
1830 (June 1)	6 532	6 334	10 537	2 329	18.1	(NA)	17.2	17.2	16.9
1840 (June 1)	8 669	8 381	14 196	2 874	16.8	(NA)	17.8	17.9	17.3
1850 (June 1)	11 838	11 354	19 553	3 639	15.7	(NA)	18.9	19.2	17.1
1860 (June 1)	16 085	15 358	26 923	4 442	14.1	79	19.4	19.7	17.7
1870 (June 1)	19 494	19 065	33 589	4 880	12.7	89	20.2	20.4	18.5
1880 (June 1)	25 519	24 637	43 403	6 581	13.1	172	20.9	21.4	18.0
1890 (June 1)	32 237	30 711	55 101	7 489	11.9	358	22.0	22.5	17.8
1900 (June 1)	38 816	37 178	66 809	8 834	11.6	351	22.9	23.4	19.4
1910 (Apr. 15)	47 332	44 640	81 732	9 828	10.7	413	24.1	24.5	20.8
1920 (Jan. 1)	53 900	51 810	94 821	10 463	9.9	427	25.3	25.6	22.3
1930 (Apr. 1)	62 137	60 638	110 287	11 891	9.7	597	26.4	26.9	23.5
1940 (Apr. 1)	66 362	65 508	118 215	12 866	9.8	589	29.0	29.5	25.3
1950 (Apr. 1)	74 833	75 864	134 942	15 042	10.0	713	30.2	30.8	26.2
1960 (Apr. 1)	87 865	90 500	158 455	18 860	10.6	1 149	29.6	30.3	23.5
UNITED STATES									
1950 (Apr. 1)	75 187	78 139	135 150	15 045	9.9	1 131	30.2	30.7	26.2
1960 (Apr. 1)	88 331	90 992	158 832	18 872	10.5	1 620	29.5	30.3	23.5
1970 (Apr. 1)	98 926	104 309	178 098	22 581	11.1	2 557	28.0	28.9	22.4
1971 (July 1, est.)	100 445	105 775	180 411	23 084	11.2	2 725	28.0	28.8	22.5
1972 (July 1, est.)	101 477	106 957	181 894	23 465	11.3	2 876	28.2	29.0	22.7
1973 (July 1, est.)	102 240	107 819	183 032	23 796	11.3	3 031	28.4	29.3	22.9
1974 (July 1, est.)	102 954	108 435	184 383	24 113	11.4	3 193	28.7	29.5	23.2
1975 (July 1, est.)	103 723	109 328	185 158	24 436	11.5	3 457	28.8	29.6	23.5
1976 (July 1, est.)	104 484	110 196	186 241	24 767	11.5	3 672	29.0	29.8	23.8
1977 (July 1, est.)	105 279	111 122	187 409	25 118	11.6	3 874	29.4	30.3	24.1
1978 (July 1, est.)	106 120	112 108	188 657	25 487	11.7	4 083	29.7	30.6	24.3
1979 (July 1, est.)	107 006	113 093	189 968	25 863	11.8	4 268	30.0	30.9	24.6
1980 (April 1)	110 512	116 473	188 341	26 488	11.7	11 680	30.0	31.3	24.9

NA Not available.

Source: U.S. Bureau of the Census, *U.S. Census of Population: 1930*, vol. II; *1940*, vol. II, part 1, and vol. IV, part 1; *1950*, vol. II, part 1; *1960*, vol. I; *1970*, vol. I, part B, and *Current Population Reports*, series P-25, Nos. 721 and 870.

Source: U.S. Bureau of the Census, Statistical Abstract of the United States: 1980 (101st edition.) Washington, D.C., 1980.

Based upon the information gained in this exercise, select from the list below the State and occupation having the lowest median age in 1970; the highest median age. The correct answers to this matching exercise are given in the inverted box. They were taken from the U.S. summary of population characteristics (1970 PC(1)) and a special report on occupational characteristics (1970 PC(2)-7A).

States

- Alaska
- Florida
- New Mexico
- New York
- Pennsylvania
- Utah

Occupations (males in the experienced civilian labor force)

- Blacksmiths
- Collectors, bill and account
- Food service workers
- Garage workers and gas station attendants
- Managers and superintendents, building
- Real estate agents and brokers

The 1980 census findings reveal that Florida has retained its number one ranking with a new median age of 34.7, almost 5 years above the national average. However, New Mexico can no longer boast that it has the youngest population. This distinction is now held by Utah (24.2).

2. One of the simplist ways to display characteristics for a population is a "percent distribution." This approach is rather useful if it is important to understand the relative distribution of population among the various age groups. Complete worksheet 5 to illustrate the distribution of population for the United States from 1960 through 1980.

3. Another important phase of the analysis of age data relates to the measurement of changes over time. The simplist measure of change by age is given by the amount and percentage of change at each age between two time intervals. The form of calculation of the percentages is, as follows:

$$\frac{\text{Age}_{1980} - \text{Age}_{1970}}{\text{Age}_{1970}} \times 100$$

Answers to Median Age Question:

States: New Mexico--22.9; Utah--23.1; Alaska--23.9; New York--30.4; Pennsylvania--30.7; and Florida--32.3.

Occupations: Garage workers and gas station attendants--21.3; food service workers--25.0; collectors, bill and account--29.7; real estate agents and brokers--47.8; blacksmiths--50.5; and managers and superintendents, building--50.9.

The results of this calculation are rather interesting to examine because the percentages vary so much among the age groups. Fill in worksheet 6 to find the percentage of change by age between 1960 and 1970 and between 1970 and 1980.

4. Comparison between two percent age distributions is facilitated by calculating indexes for each age group or overall indexes for the distributions. Age distributions for different areas, population subgroups in a single area, and the same area at different dates may be compared in this way.

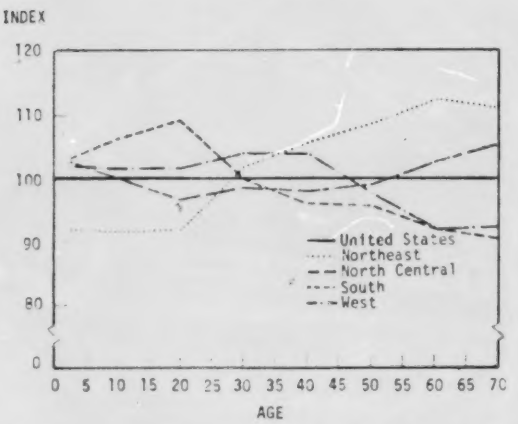
Age-specific indexes are derived by dividing the percentage at a given age in one distribution by the percentage at this age in another distribution chosen as a standard base and multiplying by 100. The procedure is illustrated by the Northeast region in 1970, using the percentages for the United States as the base of the indexes. For example, the index for the population 65 years old and over is computed, as follows:

$$\frac{\text{Percent 65 years and over, Northeast region}}{\text{Percent 65 years and over, United States}} \times 100 = \frac{.106}{.099} \times 100 = 107$$

An index of 107 means that the Northeast had a higher proportion of persons 65 years old and over than the United States did in general. Figure 2 shows how such indexes may be represented graphically for 1960. Here, indexes are shown for 1960 using the percentage for the total country as the base. The vertical scale refers to the index, and the horizontal scale, to age. The curves may be considered in comparison with one another and with the "standard" line 100, representing in effect the percentage in the age group in the United States.

FIGURE 2

Age Specific Indexes for United States Regions: 1960



NOTE.-United States index equals 100 percent. Points are plotted at midpoint of 10-year age groups 5-74 years.

Source: U.S. Census of Population: 1960, Vol. 1, Part 1, tables 45 and 52

Complete worksheets 7 and 8 so that a comparable illustration can be developed for 1970 or 1980. (The calculations used in worksheet 7 can be used as the denominators for worksheet 8.)

5. The variations in the proportions of children, aged persons, and persons of "working age" are taken into account jointly in the "age-dependency ratio." It represents the ratio of the combined child and aged populations to the population of intermediate ages. One formula for the age-dependency ratio relates the number of persons under 15 and 65 and over (numerator) to the number 15 to 64 (denominator).

This formula can be separated so that its two components are shown; that is, by using the population 0-14 years of age in the numerator, it is possible to calculate the child-dependency ratio. Similarly, the old-age dependency ratio is found by using the population 65 years old and over in the numerator. In each case the ratio is multiplied by 100.

The age-dependency ratio is a measure of age composition, not of economic dependency; however, it is sometimes used as a measure of both. In general, the higher the age-dependency ratio, the greater the contribution of the particular age composition to the economic-dependency ratio. In the absence of actual data on economic activity, the age-dependency ratio may be employed to reflect very broad variations in economic dependency; even though some persons in the "dependent" age range are producers and many persons in the "productive" age range are economically dependent (e.g., housewives and students).

The exact equation for age-dependency ratios varies according to the age groupings that are available. For example, the 1970 block statistics reports presented population counts for the total population, under 18 years, and 62 years and over. The corresponding reports for 1980 present population information for the total, under 18 years, and 65 years and over. From these data one can derive two age-dependency ratios that would vary because of the different age categories used in calculating them. One should, therefore, try to be consistent in the choice of age groupings when using the dependency ratio. Care should also be taken to inform the reader of the groupings used in order to avoid unnecessary confusion of both. Complete worksheet 9 and discuss its implications for supporting individuals in retirement in future years.

C. Age and Sex

The "population pyramid" is an effective and quite widely used method of graphically depicting the age-sex composition of a population. It is designed to give a detailed picture of the age-sex structure of a population and generally uses 5-year age groups, although adaptation can be made for other age groups. The basic pyramid form consists of bars that represent age groups in ascending order from the youngest to the oldest. These bars are stacked horizontally on one another with those for males being on the left of a central vertical axis and those for females on the right. The number of males or females in a particular age group is indicated by the length of the bars as measured from the central axis. In general, the age groups in a given pyramid must have the same class interval and must be represented by bars of equal thickness.

Two age and sex pyramids are presented in figures 3 and 4. Take a few minutes to examine each pyramid so that you will be able to answer the following questions (and then verify your results using table 3):

- Which appears to have the lowest median age?
- Which seems to have the largest proportion of male population (i.e., the highest sex ratio)?
- Which county has the highest percentage of elderly population?
- Estimate the values for the sex ratio, youth dependency ratio, old age dependency ratio, and total dependency ratio for each pyramid.

TABLE 3

Selected Demographic Characteristics for Figure's 3 & 4

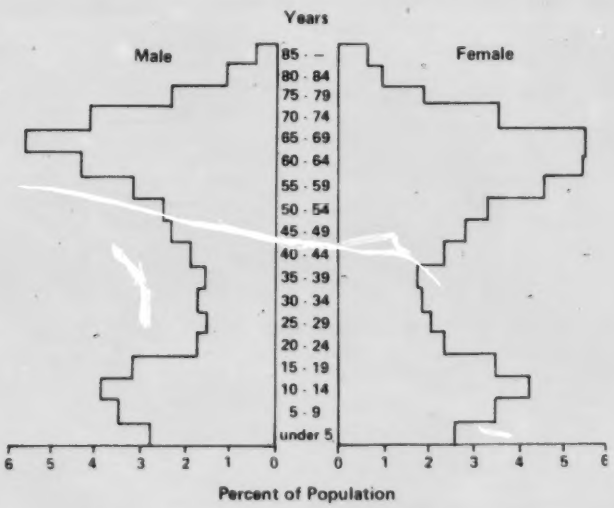
County	Sex Ratio	Dependency Ratios			Median Age
		Child	Old-age	Total	
Citrus (Florida)	93.5	37	48	85	49.0
Bullit (Kentucky)	100.6	61	11	74	23.3

Select a racial group (e.g., White, Black) and a level of geography (e.g., central city, place of 2,500 to 10,000) from either the U.S. summary or the State reports. Record the information needed to create a population pyramid on worksheet 10 (don't forget to divide each of the age groupings by the total population.) Then record your findings on the accompanying graph (worksheet 11).

Congratulations! By successfully completing these demographic exercises, you have gained an understanding of the basic ways that age and sex populations are analyzed. These skills are useful not only at the national level, but are equally important if you want to study the differences among your State's counties or the census tracts within your metropolitan area. If you are thinking of pursuing a career in urban planning or marketing, these tools will be especially useful.

FIGURE 3

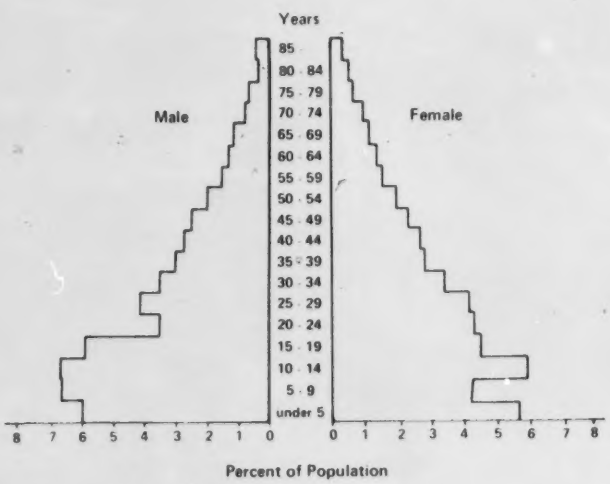
Population Pyramid: Citrus County, Florida, 1970



Source: U.S. Bureau of the Census
Census of Population: 1970
GENERAL POPULATION CHARACTERISTICS
Final Report PC(1)-B11 Florida

FIGURE 4

Population Pyramid: Bullitt County, Kentucky, 1970



Source: U.S. Bureau of the Census
Census of Population: 1970
GENERAL POPULATION CHARACTERISTICS
Final Report PC(1)-B19 Kentucky

Excerpts from "Age by Race and Sex, for Urban and Rural Residence: 1970 and 1960"

United States Size of Place, 1970	1970										1960		
		Urban					Rural						
			Urbanized areas			Other places of—							
	Total	Total	Total	Central cities	Urban fringe	10,000 or more	2,500 to 10,000	Total	Places of 1,000 to 2,500	Other rural	Total	Urban	Rural
TOTAL POPULATION													
Both Sexes													
All ages	203 211 926	149 324 930	118 446 366	63 921 684	54 524 682	16 618 596	14 259 768	53 886 996	6 656 887	47 230 989	179 323 175	125 268 750	54 054 425
Under 1 year	3 485 277	2 567 332	2 034 907	1 118 691	916 216	287 185	245 240	917 945	111 882	806 063	4 111 949	2 873 043	1 238 906
1 year	3 377 502	2 469 246	1 960 995	1 052 549	908 446	271 898	236 353	908 256	109 083	799 173	4 106 252	2 859 351	1 246 901
2 years	3 290 419	2 396 176	1 909 695	1 017 397	892 298	259 076	227 405	894 243	104 601	789 642	4 098 876	2 838 540	1 260 336
3 years	3 418 679	2 474 480	1 976 896	1 037 814	939 082	263 969	233 615	944 199	108 760	835 439	4 015 598	2 759 764	1 255 834
4 years	3 582 460	2 585 203	2 068 613	1 078 222	990 391	274 103	242 487	997 257	113 430	883 827	3 988 226	2 729 412	1 258 814
5 years	3 811 077	2 734 761	2 181 481	1 121 985	1 059 496	291 243	262 037	1 076 316	121 909	954 407	3 953 528	2 690 728	1 262 800
6 years	3 952 146	2 828 927	2 256 069	1 148 030	1 108 039	302 786	270 072	1 123 219	126 780	996 439	3 819 827	2 588 239	1 231 588
7 years	4 012 474	2 862 855	2 281 336	1 156 844	1 124 492	305 618	275 901	1 149 619	129 350	1 020 269	3 786 783	2 554 841	1 231 942
8 years	4 052 265	2 888 913	2 303 276	1 155 070	1 148 206	308 236	277 401	1 163 352	130 721	1 032 631	3 649 334	2 449 401	1 199 933
9 years	4 128 285	2 940 179	2 347 767	1 176 398	1 171 369	310 889	281 523	1 188 106	132 390	1 055 716	3 482 308	2 325 416	1 156 892
10 years	4 282 106	3 042 050	2 423 053	1 219 937	1 203 116	324 663	294 334	1 240 056	137 324	1 102 732	3 481 131	2 310 477	1 170 654
11 years	4 126 685	2 932 802	2 341 233	1 168 062	1 173 171	310 327	281 242	1 193 883	132 110	1 061 773	3 472 908	2 297 482	1 175 426
12 years	4 183 341	2 967 866	2 367 040	1 182 882	1 184 158	315 308	285 518	1 215 475	134 917	1 080 558	3 573 854	2 363 288	1 210 566
13 years	4 101 977	2 903 787	2 311 668	1 159 882	1 151 786	310 681	281 438	1 198 190	133 238	1 064 952	3 506 557	2 313 062	1 193 495
14 years	4 095 359	2 893 461	2 299 131	1 163 738	1 135 393	311 882	282 448	1 201 898	134 596	1 067 302	2 739 042	1 763 706	975 836
15 years	4 029 034	2 843 974	2 258 124	1 146 074	1 112 050	306 961	278 889	1 185 060	134 089	1 050 971	2 756 616	1 759 678	996 938
16 years	3 889 652	2 745 965	2 175 287	1 110 836	1 064 451	299 902	270 776	1 143 687	130 413	1 013 274	2 797 216	1 795 133	1 002 083
17 years	3 825 343	2 720 901	2 146 475	1 109 183	1 038 292	304 970	269 460	1 104 438	128 012	976 426	2 862 005	1 861 962	1 000 043
18 years	3 766 102	2 832 286	2 131 382	1 190 580	940 802	413 771	297 135	933 814	112 972	820 842	2 528 953	1 722 850	806 103
[illegible]	3 560 217	2 798 149	2 070 715	1 211 880	858 835	450 118	277 216	762 068	96 025	666 043	2 274 453	1 592 071	682 382
20 years	3 490 530	2 773 463	2 075 121	1 231 737	843 384	435 101	263 241	717 067	92 303	624 764	2 194 207	1 554 642	639 565
21 years and over	122 750 996	91 122 148	72 526 302	39 964 893	32 561 409	9 959 909	8 635 937	31 676 898	4 101 102	27 527 746	108 123 552	77 266 164	30 857 388
Under 5 years	17 154 337	12 492 437	9 951 106	5 304 673	4 646 433	1 356 231	1 185 100	4 661 900	547 756	4 114 144	20 320 901	14 060 110	6 260 791
5 to 9 years	19 956 247	14 255 635	11 369 929	5 758 327	5 611 602	1 518 772	1 366 934	5 700 612	641 150	5 059 462	18 691 780	12 608 625	6 083 155
10 to 14 years	20 789 468	14 739 986	11 742 125	5 894 501	5 847 624	1 572 861	1 424 980	6 049 502	672 185	5 377 317	16 773 492	11 047 515	5 725 977
15 to 19 years	19 070 348	13 941 281	10 781 983	5 767 553	5 014 430	1 775 722	1 383 576	5 129 067	601 511	4 527 556	13 219 243	8 731 694	4 487 549
20 to 24 years	16 371 021	12 896 364	10 029 420	5 860 101	4 169 319	1 722 671	1 144 273	3 474 657	448 391	3 026 266	10 800 761	7 724 250	3 076 511
25 to 29 years	13 476 993	10 202 031	8 282 673	4 497 691	3 784 982	1 054 911	864 447	3 274 962	389 658	2 885 304	10 869 124	7 845 275	3 023 849
30 to 34 years	11 430 436	8 390 225	6 784 179	3 508 685	3 275 494	857 015	749 031	3 040 211	344 351	2 695 860	11 949 186	8 642 742	3 306 444
35 to 39 years	11 106 851	8 134 561	6 573 705	3 319 819	3 253 886	828 907	731 949	2 972 290	334 879	2 637 411	12 481 109	9 044 123	3 436 986
40 to 44 years	11 980 954	8 875 423	7 195 702	3 640 306	3 555 396	895 561	784 160	3 105 531	365 013	2 740 518	11 600 243	8 325 027	3 275 216
45 to 49 years	12 115 939	9 047 116	7 345 186	3 793 231	3 551 955	914 342	787 588	3 068 823	369 009	2 699 814	10 879 485	7 756 492	3 122 993
50 to 54 years	11 104 018	8 201 416	6 599 411	3 549 051	3 050 360	852 141	749 864	2 902 602	363 270	2 539 332	9 605 954	6 851 113	2 754 841
55 to 59 years	9 973 028	7 278 846	5 794 703	3 289 132	2 505 571	779 420	704 723	2 694 182	349 285	2 344 897	8 479 865	6 014 592	2 415 273
60 to 64 years	8 616 784	6 238 514	4 890 616	2 896 479	1 994 137	702 017	645 881	2 378 270	326 884	2 051 386	7 142 452	5 091 000	2 051 452
65 to 69 years	6 991 625	5 054 537	3 903 371	2 390 315	1 513 056	590 746	560 420	1 937 088	285 379	1 651 709	6 257 910	4 402 412	1 855 498
70 to 74 years	5 443 831	3 981 347	3 044 939	1 879 535	1 165 404	476 397	440 011	1 462 484	238 876	1 223 608	4 738 932	3 314 123	1 424 809
75 to 79 years	3 834 834	2 813 214	2 115 635	1 309 957	805 678	350 729	346 850	1 021 620	181 926	839 694	3 053 559	2 100 909	952 650
80 to 84 years	2 284 311	1 676 365	1 238 789	766 805	471 984	218 833	218 743	607 946	116 296	491 650	1 579 927	1 077 727	502 207
85 years and over	1 510 901	1 105 652	803 094	495 523	307 571	151 320	151 238	405 249	80 188	325 061	929 252	631 128	298 124
Under 18 years	69 644 081	49 798 882	39 643 046	20 322 594	19 320 452	5 359 697	4 796 139	19 845 199	2 253 605	17 591 594	64 202 010	43 133 023	21 068 987
62 years and over	25 000 504	18 196 902	13 891 480	8 502 670	5 388 810	2 193 096	2 112 326	6 803 602	1 093 199	5 710 403	20 845 051	14 580 792	6 264 259
65 years and over	20 065 502	14 631 115	11 105 828	6 842 135	4 263 693	1 788 025	1 737 262	5 434 387	902 665	4 531 722	16 559 580	11 526 192	5 033 388
Median age	28.1	28.1	28.2	28.8	27.6	26.7	28.6	27.9	30.4	27.6	29.5	30.4	27.3
Male													
All ages	98 912 192	71 958 564	57 835 148	30 409 942	26 625 206	8 051 809	6 871 607	26 953 628	3 301 271	23 752 357	88 331 494	60 733 005	27 598 489
Under 1 year	1 777 915	1 309 654	1 037 950	570 023	467 927	146 459	125 245	468 261	56 889	411 372	2 089 909	1 459 820	630 089
1 year	1 721 763	1 257 653	998 848	535 034	463 814	138 116	120 689	464 110	55 806	408 224	2 085 354	1 450 549	634 805
2 years	1 678 842	1 221 303	973 513	517 721	455 792	132 002	115 788	457 539	53 468	404 071	2 084 452	1 442 401	642 051
3 years	1 740 906	1 258 269	1 005 589	526 806	478 783	134 025	118 655	482 637	55 447	427 190	2 040 591	1 399 690	640 901
4 years	1 826 073	1 315 918	1 052 613	547 372	505 241	139 784	123 521	510 155	57 858	452 297	2 029 423	1 386 531	642 892
5 years	1 941 004	1 390 041	1 109 174	569 015	540 159	147 954	132 913	550 963	62 266	488 697	2 011 362	1 365 882	645 480
6 years	2 012 834	1 438 090	1 147 289	581 466	565 823	153 671	137 130	574 744	64 439	510 305	1 939 097	1 310 508	628 589
7 years	2 043 834	1 455 141	1 160 371	586 175	574 196	155 254	139 516	588 693	65 562	523 131	1 924 076	1 294 144	629 932
8 years	2 065 571	1 469 300	1 171 855	586 104	585 751	156 640	140 805	596 271	66 351	529 920	1 857 230	1 241 340	615 890
9 years	2 105 253	1 495 920	1 195 292	597 270	598 022	157 711	142 917	609 333	66 979	542 354	1 772 603	1 178 433	594 170
10 years	2 183 371	1 545 263	1 230 721	617 490	613 231	164 752	149 790	638 708	69 943	568 765	1 770 747	1 169 793	601 954
11 years	2 100 739	1 487 249	1 186 975	590 014	596 961	157 499	142 775	613 490	66 943	546 547	1 765 126	1 161 293	603 833
12 years	2 132 903	1 507 417	1 202 477	598 872	603 605	159 792	145 148	625 486	68 338	557 148	1 817 916	1 194 273	623 643
13 years	2 088 820	1 471 580	1 171 150	585 298	585 852	157 914	142 516	617 240	67 382	549 858	1 781 553	1 167 363	614 190
14 years	2 084 904	1 465 110	1 164 655	586 777	577 878	157 633	142 822	619 794	68 376	551 418	1 388 947	885 530	503 417
15 years	2 053 643	1 439 779	1 143 029	577 854	565 175	155 084	141 666	613 864	67 800	546 064	1 398 066	881 226	516 840
16 years	1 979 619	1 385 652	1 097 991	556 932	541 059	150 968	136 693	593 967	65 984	527 983	1 416 200	894 401	521 799
17 years	1 944 907	1 372 681	1 081 023	553 228	527 795	155 314	136 344	572 226	64 525	507 701	1 443 277	914 883	528 394
18 years	1 893 207	1 402 076	1 052 018	576 331	475 687	205 914	144 144	491 131	57 225	433 906	1 261 572	814 683	446 889
19 years	1 762 471	1 372 001	998 680	570 546	428 134	232 131	141 190	390 470	47 095	343 375	1 114 546	731 486	383 060
20 years	1 680 817	1 330 155	971 553	564 298	407 255	224 825	133 777	350 662	44 086	306 576	1 066 853	714 049	352 804
21 years and over	58 092 796	42 568 312	33 882 382	18 415 316	15 467 066	4 668 367	4 017 563	15 524 484	1 908 429	13 616 055	52 272 594	36 674 527	15 598 067
Under 5 years	8 745 499	6 362 797	5 068 513	2 696 956	2 371 557	690 386	603 898	2 382 702	279 548	2 103 154	10 329 729	7 138 991	3 190 738
5 to 9 years	10 168 498	7 248 492	5 783 981	2 920 030	2 863 951	771 230	693 281	2 920 004	325 597	2 594 407	9 564 368	6 390 507	3 113 861
10 to 14 years	10 590 737	7 476 619	5 955 978	2 978 451	2 977 527	797 590	723 051	3 114 118	340 982	2 773 136	8 524 289	5 578 252	2 946 037
15 to 19 years	9 633 847	6 972 189	5 372 741	2 834 891	2 537 850	899 411	700 037	2 661 658	302 629	2 359 029	6 633 661	4 236 679	2 396 982
20 to 24 years	7 917 269	6 218 656	4 737 070	2 746 670	1 990 400	901 109	580 477	1 698 613	216 920	1 481 693	5 272 340	3 636 579	1 635 761
25 to 29 years	6 621 567	5 011 979	4 050 754	2 212 922	1 837 832	533 981	427 244	1 609 588	191 109	1 418 479	5 333 075	3 836 208	1 496 867
30 to 34 years	5 595 790	4 095 546	3 309 720	1 713 160	1 596 560	419 568	366 258	1 500 244	168 623	1 331 621	5 846 224	4 204 056	1 642 168
35 to 39 years	5 412 423	3 946 755	3 191 539	1 599 122	1 592 417	401 560	353 656	1 465 668	161 773	1 303 895	6 079 512	4 375 095	1 704 417
40 to 44 years	5 818 813	4 268 895	3 464 434	1 728 218	1 736 216	427 403	377 058	1 549 918	176 616	1 373 302	5 675 881	4 027 006	1 648 875
45 to 49 years	5 851 334	4 329 795	3 519 583	1 786 963	1 732 620	434 592	375 620	1 521 539	177 189	1 344 350	5 357 925	3 756 774	1 601 151
50 to 54 years	5 347 916	3 907 222	3 150 982	1 654 951	1 496 031	402 094	354 146	1 440 694	171 548	1 269 148	4 734 829	3 313 918	1 420 911
55 to 59 years	4 765 821	3 417 226	2 730 247	1 514 411	1 215 836	359 772	327 207	1 348 595	164 166	1 184 429	4 127 245	2 884 813	1 242 432
60 to 64 years	4 026 972	2 842 921	2 240 318	1 301 709	938 609	312 753	289 850	1 184 051	149 713	1 034 338	3 409 319	2 369 178	1 040 141
65 to 69 years	3 122 084	2 170 584	1 681 425	1 014 803	666 622	248 503	240 656	951 500	125 850	825 [illegible]	2 991 088	1 989 483	941 605
70 to 74 years	2 315 000	1 614 884	1 235 953	755 945	480 008	190 552	188 379	700 134	100 904	599 [illegible]	2 [illegible] 216	1 459 934	725 282
75 to 79 years	1 560 661	1 089 317	820 014	504 777	315 237	133 046	136 257	471 244	73 817	397 527	1 359 424	884 006	475 418
80 to 84 years	875 584	608 715	448 767	277 420	171 347	78 014	81 934	266 869	45 106	221 763	865 095	423 452	241 641
85 years and over	542 379	375 972	273 129	168 543	104 586	50 245	52 598	166 407	29 383	137 024	362 276	228 074	134 202
Under 18 years	35 482 901	25 286 020	20 130 515	10 283 451	9 847 064	2 720 572	2 434 933	10 196 881	1 144 436	9 052 445	32 615 929	21 798 260	10 817 669
62 years and over	10 708 654	7 471 184	5 725 343	3 462 321	2 263 022	879 [illegible]	866 609	3 237 470	461 629	2 775 841	9 548 688	6 406 456	3 142 233
65 years and over	8 415 708	5 859 472	4 459 288	2 721 488	1 737 800	700 [illegible]	699 924	2 556 236	374 880	2 181 376	7 503 097	4 984 949	2 518 148
Median age	26.8	26.7	27.0	27.3	26.6	26.6	26.6	27.2	28.5	27.0	28.7	29.4	26.7

Source: 1970 PC(1)-B-1, table 52.

Age by Race and Sex: 1900 to 1970

(See footnote in table 48 regarding data for 1910 through 1940. For minimum base for derived figures (percent, median, etc.) and meaning of symbols, see text)

United States

TOTAL

Both Sexes

	Population								Percent distribution							
	1970	1960	1950	1940	1930	1920	1910	1900	1970	1960	1950	1940	1930	1920	1910	1900
All ages	203 211 926	179 323 175	151 325 798	131 669 275	123 077 681	106 021 568	92 228 531	76 212 168	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Under 5 years	17 154 337	20 320 940	16 243 141	10 549 220	11 498 926	11 617 449	10 660 792	9 189 346	8.4	11.3	10.7	8.0	9.3	11.0	11.6	12.1
5 to 9 years	19 956 241	18 691 780	13 262 123	10 734 852	12 660 806	11 433 869	9 783 713	8 889 249	9.8	10.4	8.8	8.1	10.3	10.8	10.6	11.7
10 to 14 years	20 789 468	16 773 492	11 167 478	11 799 526	12 048 014	10 667 489	9 123 553	8 091 882	10.2	9.4	7.4	8.9	9.8	10.1	9.6	10.6
15 to 19 years	19 070 348	13 219 243	10 671 321	12 387 471	11 590 340	9 454 480	9 080 787	7 570 087	9.4	7.4	7.1	9.4	9.4	8.9	9.8	9.9
20 to 24 years	16 371 021	10 800 761	11 549 355	11 645 184	10 917 404	9 305 273	9 083 377	7 360 790	8.1	6.0	7.6	8.8	8.9	8.8	9.8	9.7
25 to 29 years	13 476 993	10 869 124	12 305 951	11 145 741	9 874 450	9 112 321	8 208 570	6 561 688	6.6	6.1	8.1	8.4	8.0	8.6	8.9	8.6
30 to 34 years	11 430 436	11 949 186	11 572 337	10 281 662	9 151 657	8 096 719	7 001 850	5 581 141	5.6	6.7	7.6	7.8	7.4	7.6	7.6	7.3
35 to 39 years	11 106 851	12 481 109	11 294 478	9 579 430	9 235 355	7 799 615	6 422 989	4 984 346	5.5	7.0	7.5	7.2	7.5	7.4	7.0	6.5
40 to 44 years	11 985 954	11 600 243	10 244 671	8 813 993	8 013 336	6 367 707	5 281 764	4 261 103	5.9	6.5	6.8	6.7	6.5	6.0	5.7	5.6
45 to 49 years	12 115 939	10 879 485	9 101 778	8 276 759	7 060 027	5 782 919	4 483 637	3 463 173	6.0	6.1	6.0	6.3	5.7	5.4	4.9	4.5
50 to 54 years	11 184 018	9 605 954	8 295 580	7 275 863	5 992 964	4 748 331	3 910 279	2 948 413	5.5	5.4	5.5	5.5	4.9	4.5	4.2	3.9
55 to 59 years	9 973 028	8 429 865	7 252 524	5 858 395	4 658 448	3 557 516	2 792 340	2 214 375	4.9	4.7	4.8	4.4	3.8	3.4	3.0	2.9
60 to 64 years	8 616 784	7 142 452	6 074 363	4 740 298	3 760 291	2 989 034	2 271 202	1 794 578	4.2	4.0	4.0	3.6	3.1	2.8	2.5	2.4
65 to 69 years	6 990 625	6 257 910	5 013 490	3 815 355	2 775 962	2 071 917	1 681 589	1 304 442	3.4	3.5	3.3	2.9	2.3	2.0	1.8	1.7
70 to 74 years	5 643 831	4 738 932	3 419 208	2 574 111	1 952 841	1 396 609	1 114 898	884 732	2.7	2.6	2.3	1.9	1.6	1.3	1.2	1.2
75 years and over	7 630 046	5 562 738	3 862 000	2 846 863	1 915 575	1 471 211	1 157 458	894 765	3.8	3.1	2.6	2.0	1.6	1.4	1.3	1.2
Not reported				406	96 264	149 109	169 733	218 058	...	...	...	-	0.1	0.1	0.2	0.3
Median age	28.1	29.5	30.2	29.0	26.4	25.3	24.1	22.9	...	...	...	...	...	...	...	...

Male

All ages	98 912 192	88 331 694	75 186 686	66 349 738	62 395 684	54 066 134	47 501 233	38 968 689	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Under 5 years	8 745 499	10 329 729	8 276 952	5 379 108	5 833 944	5 879 [illegible]	5 395 471	4 643 213	8.8	11.7	11.0	8.1	9.3	10.9	11.4	11.9
5 to 9 years	10 168 496	9 504 368	6 746 568	5 444 271	6 408 089	5 771 [illegible]	4 935 809	4 487 134	10.3	10.8	9.0	8.2	10.3	10.7	10.4	11.5
10 to 14 years	10 590 737	8 524 289	5 684 922	5 979 562	6 090 613	5 382 [illegible]	4 610 372	4 089 274	10.7	9.7	7.6	9.0	9.8	10.0	9.7	10.5
15 to 19 years	9 633 847	6 633 661	5 342 290	6 209 432	5 779 544	4 687 075	4 537 148	3 758 776	9.7	7.5	7.1	9.4	9.3	8.7	9.6	9.6
20 to 24 years	7 917 269	5 272 340	5 646 699	5 728 069	5 370 894	4 543 914	4 598 468	3 642 769	8.0	6.0	7.5	8.6	8.6	8.4	9.7	9.3
25 to 29 years	6 621 567	5 333 075	6 006 520	5 481 762	4 887 876	4 552 435	4 264 037	3 347 691	6.7	6.0	8.0	8.3	7.8	8.4	9.0	8.6
30 to 34 years	5 595 790	5 846 224	5 655 538	5 095 365	4 581 246	4 146 847	3 678 162	2 920 735	5.7	6.6	7.5	7.7	7.3	7.7	7.7	7.5
35 to 39 years	5 412 423	6 079 512	5 546 565	4 766 737	4 695 410	4 089 903	3 386 916	2 632 244	5.5	6.9	7.4	7.2	7.5	7.6	7.1	6.8
40 to 44 years	5 818 813	5 675 881	5 093 005	4 434 622	4 151 452	3 300 700	2 801 838	2 266 963	5.9	6.4	6.8	6.7	6.7	6.1	5.9	5.8
45 to 49 years	5 851 334	5 357 925	4 545 606	4 221 445	3 684 846	3 131 634	2 390 197	1 844 292	5.9	6.1	6.0	6.4	5.9	5.8	5.0	4.7
50 to 54 years	5 347 916	4 734 829	4 142 277	3 764 840	3 143 338	2 545 709	2 117 345	1 568 714	5.4	5.4	5.5	5.7	5.0	4.7	4.5	4.0
55 to 59 years	4 765 821	4 127 245	3 639 761	3 020 691	2 435 050	1 886 514	1 492 492	1 147 568	4.8	4.7	4.8	4.6	3.9	3.5	3.1	2.9
60 to 64 years	4 026 972	3 409 319	3 047 212	2 605 768	1 948 252	1 586 832	1 189 077	919 573	4.1	3.9	4.1	3.6	3.1	2.9	2.5	2.4
65 to 69 years	3 122 084	2 931 088	2 431 035	1 902 057	1 421 894	1 082 411	865 490	668 740	3.2	3.3	3.2	2.9	2.3	2.0	1.8	1.7
70 to 74 years	2 315 000	2 185 216	1 633 382	1 274 152	993 741	707 377	562 415	450 155	2.3	2.5	2.2	1.9	1.6	1.3	1.2	1.2
75 years and over	2 978 624	2 386 793	1 748 274	1 241 583	917 298	697 867	561 043	438 724	3.0	2.7	2.3	1.9	1.5	1.3	1.2	1.1
Not reported				266	51 970	93 180	114 953	142 124	...	...	...	-	0.1	0.1	0.2	0.4
Median age	26.8	28.7	29.9	29.0	26.7	25.8	24.6	23.3	...	...	...	...	...	...	...	...

Female

All ages	104 299 734	90 991 481	76 139 112	65 319 399	60 807 176	51 935 432	44 727 298	37 243 479	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Under 5 years	8 408 838	9 991 172	7 966 189	5 210 112	5 664 982	5 737 654	5 265 321	4 546 133	8.1	11.0	10.5	7.9	9.3	11.0	11.8	12.2
5 to 9 years	9 787 751	9 187 412	6 515 555	5 290 581	6 252 708	5 662 634	4 847 904	4 402 115	9.4	10.1	8.6	8.0	10.3	10.9	10.8	11.8
10 to 14 years	10 198 731	8 249 203	5 482 556	5 819 964	5 957 383	5 284 751	4 513 181	4 002 608	9.8	9.1	7.2	8.8	9.8	10.2	10.1	10.7
15 to 19 years	9 436 501	6 585 582	5 329 031	6 178 039	5 810 796	4 767 455	4 543 639	3 811 311	9.0	7.2	7.0	9.4	9.6	9.2	10.2	10.2
20 to 24 years	8 453 752	5 528 421	5 902 656	5 917 115	5 546 510	4 761 359	4 484 909	3 718 021	8.1	6.1	7.8	9.0	9.1	9.2	10.0	10.0
25 to 29 years	6 855 426	5 536 049	6 299 431	5 663 979	4 986 574	4 559 886	3 944 533	3 213 997	6.6	6.1	8.3	8.6	8.2	8.8	8.8	8.6
30 to 34 years	5 834 646	6 102 962	5 916 799	5 186 297	4 570 411	3 949 872	3 323 688	2 660 406	5.6	6.7	7.8	7.9	7.5	7.6	7.4	7.1
35 to 39 years	5 694 428	6 401 597	5 747 913	4 812 693	4 539 945	3 709 712	3 036 073	2 352 102	5.5	7.0	7.5	7.3	7.5	7.1	6.8	6.3
40 to 44 years	6 162 141	5 924 362	5 147 666	4 379 371	3 861 884	3 067 007	2 479 926	1 994 140	5.9	6.5	6.8	6.7	6.4	5.9	5.5	5.4
45 to 49 years	6 264 605	5 521 560	4 558 172	4 055 314	3 377 181	2 651 285	2 093 440	1 618 881	6.0	6.1	6.0	6.2	5.6	5.1	4.7	4.3
50 to 54 years	5 756 182	4 871 125	4 153 303	3 511 023	2 849 626	2 202 622	1 792 934	1 379 699	5.5	5.4	5.5	5.3	4.7	4.2	4.0	3.7
55 to 59 years	5 207 207	4 302 620	3 612 763	2 837 704	2 223 398	1 671 002	1 299 848	1 066 807	5.0	4.7	4.7	4.3	3.7	3.2	2.9	2.9
60 to 64 years	4 589 812	3 733 133	3 027 151	2 334 530	1 812 039	1 402 202	1 082 125	875 005	4.4	4.1	4.0	3.5	3.0	2.7	2.4	2.3
65 to 69 years	3 869 541	3 326 822	2 582 455	1 913 298	1 354 068	989 506	816 099	635 702	3.7	3.7	3.4	2.9	2.2	1.9	1.8	1.7
70 to 74 years	3 128 831	2 553 716	1 785 826	1 299 959	959 100	689 232	552 483	434 577	3.0	2.8	2.3	2.0	1.6	1.3	1.2	1.2
75 years and over	4 651 422	3 175 945	2 113 726	1 405 280	998 277	773 344	596 415	456 041	4.5	3.5	2.8	2.1	1.6	1.5	1.3	1.2
Not reported				140	42 294	55 929	54 780	75 934	...	...	...	...	0.1	0.1	0.1	0.2
Median age	29.3	30.3	30.5	29.0	26.2	24.7	23.5	22.4	...	...	...	...	...	...	...	...

WHITE

Both Sexes

All ages	177 748 975	158 831 732	135 149 699	118 357 831	110 395 783	94 982 560	81 813 685	66 868 588	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Under 5 years	14 423 140	17 358 552	14 206 738	9 238 708	10 151 119	10 382 960	9 330 848	7 924 658	8.1	10.9	10.5	7.8	9.2	10.9	11.4	11.9
5 to 9 years	16 897 426	16 087 542	11 611 025	9 337 381	11 170 972	10 095 403	8 481 259	7 642 669	9.5	10.1	8.6	7.9	10.1	10.6	10.4	11.4
10 to 14 years	17 681 117	14 638 892	9 703 895	10 361 068	10 702 820	9 376 063	7 923 289	6 962 908	9.9	9.2	7.2	8.8	9.7	9.9	9.2	10.4
15 to 19 years	16 370 360	11 608 229	9 345 432	10 976 539	10 258 040	8 320 703	7 973 703	6 546 335	9.2	7.3	6.9	9.3	9.3	8.8	9.7	9.8
20 to 24 years	14 281 827	9 470 779	10 206 919	10 363 924	9 627 653	8 192 439	7 994 706	6 339 601	8.0	6.0	7.6	8.8	8.7	8.6	9.8	9.5
25 to 29 years	11 811 914	9 555 585	10 950 004	9 921 640	8 720 467	8 148 789	7 266 874	10 778 877	6.6	6.0	8.1	8.4	7.9	8.6	8.9	16.1
30 to 34 years	9 967 437	10 588 830	10 379 700	9 220 301	8 219 460	7 345 922	6 276 552		5.6	6.7	7.7	7.8	7.4	7.7	7.7	
35 to 39 years	9 720 869	11 140 841	10 077 161	8 528 053	8 286 642	6 973 105	5 740 059	8 322 095	5.5	7.0	7.5	7.2	7.5	7.3	7.0	12.4
40 to 44 years	10 606 832	10 423 020	9 204 318	7 944 954	7 274 007	5 761 447	4 786 934		6.0	6.6	6.8	6.7	6.6	6.1	5.9	
45 to 49 years	10 844 642	9 740 584	8 180 192	7 560 584	6 387 861	5 193 368	4 066 094	5 744 499	6.1	6.2	6.1	6.4	5.8	5.5	5.0	8.6
50 to 54 years	10 001 857	8 693 528	7 543 650	6 686 917	5 450 876	4 321 329	3 558 846		5.6	5.5	5.6	5.6	4.9	4.6	4.4	
55 to 59 years	9 006 502	7 626 211	6 702 037	5 431 917	4 323 017	3 308 600	2 566 245	3 643 845	5.1	4.8	5.0	4.6	3.9	3.5	3.1	5.4
60 to 64 years	7 804 710	6 550 673	5 657 376	4 420 406	3 499 763	2 773 694	2 070 784		4.4	4.1	4.2	3.7	3.2	2.9	2.5	
65 to 69 years	6 299 054	5 739 224	4 588 995	3 501 691	2 609 206	1 925 689	1 550 745	2 807 452	3.5	3.6	3.4	3.0	2.4	2.0	1.9	4.2
70 to 74 years	4 982 083	4 291 042	3 183 570	2 402 174	1 846 547	1 299 444	1 031 298		2.8	2.8	2.4	2.0	1.7	1.4	1.3	
75 years and over	7 049 205	5 173 622	3 608 617	2 481 368	1 788 606	1 360 664	1 059 490		4.0	3.3	2.7	2.1	1.6	1.4	1.3	
Not reported				206	78 696	123 921	134 699	155 569	...	...	...	-	0.1	0.1	0.2	0.2
Median age	28.9	30.3	30.7	29.5	26.9	25.6	24.5	23.4	...	...	...	...	...	...	...	...

Male

All ages	86 798 987	78 367 149	67 254 993	59 538 616	55 991 138	48 481 766	42 233 361	34 565 539	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Under 5 years	7 374 333	8 849 181	7 255 723	4 706 173	5 162 958	5 265 321	4 732 624	4 013 838	8.5	11.3	10.8	7.9	9.2	10.8	11.2	11.7
5 to 9 years	8 633 093	8 207 157	5 922 422	4 748 802	5 666 871	5 103 438	4 288 385	3 864 521	10.0	10.5	8.8	8.0	10.1	10.5	10.2	11.3
10 to 14 years	9 033 725	7 456 573	4 949 357	5 263 245	5 419 521	4 738 494	4 008 619	3 521 231	10.4	9.5	7.4	8.8	9.7	9.8	9.3	10.3
15 to 19 years	8 291 270	5 837 093	4 696 766	5 524 189	5 138 105	4 145 708	4 002 030	3 259 819	9.6	7.4	7.0	9.3	9.2	8.6	9.5	9.5
20 to 24 years	6 940 820	4 645 822	5 023 563	5 132 242	4 758 211	4 023 054	4 076 904	3 148 715	8.0	5.9	7.5	8.6	8.5	8.3	9.7	9.1
25 to 29 years	5 849 792	4 721 783	5 364 484	4 903 341	4 331 984	4 098 470	3 799 447	5 571 167	6.7	6.0	8.0	8.2	7.7	8.5	9.0	16.3
30 to 34 years	4 925 069	5 218 188	5 094 766	4 581 410	4 121 782	3 780 773	3 304 250		5.7	6.7	7.6	7.7	7.4	7.8	7.8	
35 to 39 years	4 784 375	5 446 833	4 986 995	4 261 143	4 230 294	3 670 110	3 030 299	1 423 107	5.5	7.0	7.4	7.2	7.6	7.6	7.2	12.9
40 to 44 years	5 194 497	5 117 038	4 581 568	4 000 403	3 777 122	2 991 476			6.0	6.5	6.8	6.7	6.7	6.2	6.0	

Source: 1970 PC(1)-B-1, table 53.

Age by Race and Sex: 1900 to 1970--Continued

[See footnote in table 48 regarding data for 1910 through 1940. For maximum base for derived figures (percent, median, etc.) and meaning of symbols, see text]

United States

	Population								Percent distribution							
	1970	1960	1950	1940	1930	1920	1910	1900	1970	1960	1950	1940	1930	1920	1910	1900
WHITE – Continued																
Male – Continued																
45 to 49 years	5 257 619	4 828 179	4 086 557	3 847 267	3 331 264	2 783 077	2 165 871	3 051 780	6.1	6.2	6.1	6.5	5.9	5.7	5.1	8.9
50 to 54 years	4 832 555	4 286 023	3 760 945	3 455 867	2 839 377	2 296 663	1 918 674		5.6	5.5	5.6	5.8	5.1	4.7	4.5	
55 to 59 years	4 310 921	3 728 596	3 354 638	2 793 345	2 242 279	1 742 940	1 365 395	1 866 985	5.0	4.8	5.0	4.7	4.0	3.6	3.2	5.5
60 to 64 years	3 647 243	3 121 664	2 832 328	2 234 912	1 801 939	1 463 295	1 077 471		4.2	4.0	4.2	3.8	3.2	3.0	2.6	
65 to 69 years	2 807 974	2 684 132	2 225 073	1 738 750	1 331 137	999 808	792 864		3.2	3.4	3.3	2.9	2.4	2.1	1.9	
70 to 74 years	2 107 552	2 018 350	1 514 530	1 184 383	938 178	656 390	519 166	1 416 455	2.4	2.6	2.3	2.0	1.7	1.4	1.2	4.1
75 years and over	2 730 149	2 205 534	1 625 276	1 163 006	856 671	644 192	514 015		3.1	2.8	2.4	2.0	1.5	1.3	1.2	
Not reported	...	...	...	138	43 445	78 537	94 519	107 941	...	...	...	–	0.1	0.2	0.2	0.3
Median age	27.6	29.4	30.4	29.5	27.1	26.1	25.0	23.8	...	...	...	...	...	...	...	...
Female																
All ages	91 887 988	80 664 583	67 894 638	58 819 313	54 604 615	46 421 794	39 579 844	32 622 949	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Under 5 years	7 048 807	8 509 371	6 951 015	4 532 535	4 988 161	5 117 639	4 598 224	3 910 820	7.7	10.6	10.2	7.7	9.2	11.0	11.6	12.0
5 to 9 years	8 264 333	7 885 385	5 688 603	4 588 579	5 504 101	4 991 965	4 192 854	3 778 148	9.1	9.8	8.4	7.8	10.1	10.8	10.6	11.6
10 to 14 years	8 647 392	7 182 319	4 754 538	5 097 823	5 283 299	4 637 569	3 914 670	3 441 677	9.5	8.9	7.0	8.7	9.7	10.0	9.9	10.5
15 to 19 years	8 079 090	5 771 136	4 648 666	5 452 350	5 119 935	4 174 995	3 971 673	3 286 516	8.9	7.2	6.8	9.3	9.4	9.0	10.0	10.1
20 to 24 years	7 341 007	4 824 957	5 183 356	5 231 682	4 869 442	4 169 385	3 917 802	3 190 886	8.1	6.0	7.6	8.9	9.0	9.0	9.9	9.8
25 to 29 years	5 962 122	4 833 802	5 585 520	5 018 299	4 388 483	4 050 319	3 467 427	5 207 710	6.5	6.0	8.2	8.5	8.1	8.7	8.8	16.0
30 to 34 years	5 042 368	5 370 642	5 284 934	4 638 891	4 087 678	3 565 149	2 972 302		5.5	6.7	7.8	7.9	7.5	7.7	7.5	
35 to 39 years	4 936 494	5 694 008	5 110 166	4 266 910	4 056 349	3 302 995	2 709 770	3 898 988	5.4	7.1	7.5	7.3	7.5	7.1	6.8	12.0
40 to 44 years	5 417 335	5 305 982	4 622 750	3 944 551	3 496 885	2 769 971	2 244 496		5.9	6.6	6.8	6.7	6.4	6.0	5.7	
45 to 49 years	5 587 023	4 956 983	4 093 635	3 693 317	3 056 597	2 410 291	1 900 223	2 692 719	6.1	6.2	6.0	6.3	5.6	5.2	4.8	8.3
50 to 54 years	5 169 302	4 407 505	3 782 705	3 231 050	2 611 499	2 024 666	1 640 172		5.7	5.5	5.6	5.5	4.8	4.4	4.1	
55 to 59 years	4 695 581	3 897 612	3 347 399	2 638 572	2 080 738	1 565 660	1 200 850	1 776 860	5.2	4.8	4.9	4.5	3.8	3.4	3.0	5.4
60 to 64 years	4 157 467	3 429 009	2 825 048	2 185 494	1 697 824	1 310 399	992 913		4.6	4.3	4.2	3.7	3.1	2.8	2.5	
65 to 69 years	3 491 080	3 055 092	2 363 922	1 762 941	1 278 069	925 881	757 881		3.8	3.8	3.5	3.0	2.3	2.0	1.9	
70 to 74 years	2 874 531	2 372 692	1 669 040	1 217 791	908 369	643 054	512 132	1 390 997	3.2	2.9	2.5	2.1	1.7	1.4	1.3	4.3
75 years and over	4 319 056	2 968 088	1 983 341	1 318 362	931 935	716 472	545 475		4.7	3.7	2.9	2.2	1.7	1.5	1.4	
Not reported	...	...	...	68	35 251	45 384	40 180	47 628	...	...	...	–	0.1	0.1	0.1	0.1
Median age	30.2	31.1	31.1	29.5	26.6	25.1	23.9	22.9	...	...	...	...	...	...	...	...
NEGRO AND OTHER RACES																
Both Sexes																
All ages	25 463 951	20 691 442	16 176 169	13 807 298	12 886 987	11 118 926	10 416 126	9 343 660	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Under 5 years	2 731 197	2 962 349	2 036 403	1 350 512	1 347 807	1 234 489	1 329 944	1 264 688	10.7	14.5	12.6	9.8	10.5	11.1	12.8	13.5
5 to 9 years	3 058 821	2 604 238	1 651 098	1 397 471	1 489 834	1 338 466	1 302 474	1 246 580	12.0	12.7	10.2	10.1	11.6	12.0	12.5	13.3
10 to 14 years	3 108 351	2 134 600	1 463 583	1 438 458	1 345 194	1 291 426	1 200 264	1 128 974	12.2	10.4	9.0	10.4	10.5	11.6	11.5	12.1
15 to 19 years	2 699 988	1 611 014	1 325 889	1 410 932	1 332 300	1 133 777	1 107 084	1 023 752	10.6	7.9	8.2	10.2	10.4	10.2	10.6	11.0
20 to 24 years	2 089 194	1 329 982	1 342 436	1 281 260	1 289 751	1 112 834	1 088 671	1 021 189	8.2	6.5	8.3	9.3	10.1	10.0	10.5	10.9
25 to 29 years	1 665 079	1 313 539	1 355 947	1 224 101	1 153 983	963 532	941 696	1 363 952	6.5	6.4	8.4	8.9	9.0	8.7	9.0	14.6
30 to 34 years	1 462 999	1 360 356	1 192 637	1 061 361	932 197	750 797	725 298		5.7	6.6	7.4	7.7	7.3	6.8	7.0	
35 to 39 years	1 385 982	1 340 268	1 217 317	1 051 377	948 712	826 510	682 930	923 354	5.4	6.5	7.5	7.6	7.4	7.4	6.6	9.9
40 to 44 years	1 374 122	1 177 223	1 036 353	869 039	739 329	606 260	494 830		5.4	5.7	6.4	6.3	5.8	5.5	4.8	
45 to 49 years	1 271 297	1 094 323	921 586	736 175	674 166	589 551	417 543	667 087	5.0	5.3	5.7	5.3	5.3	5.3	4.0	7.1
50 to 54 years	1 102 161	912 426	751 930	588 946	542 088	427 002	351 433		4.3	4.5	4.6	4.3	4.2	3.8	3.4	
55 to 59 years	986 526	803 654	550 487	426 478	335 431	248 916	226 095	365 108	3.8	3.9	3.4	3.1	2.6	2.2	2.2	3.9
60 to 64 years	812 074	591 779	416 987	319 892	260 528	215 340	200 418		3.2	2.9	2.6	2.3	2.0	1.9	1.9	
65 to 69 years	692 571	518 686	424 495	313 664	266 756	166 228	130 844		2.7	2.5	2.6	2.3	1.3	1.3	1.3	
70 to 74 years	461 748	347 890	235 638	171 937	106 294	97 165	83 600	276 487	1.8	1.7	1.5	1.2	0.8	0.9	0.8	3.0
75 years and over	580 841	389 116	253 383	165 495	126 969	110 547	97 968		2.3	1.9	1.6	1.2	1.0	1.0	0.9	
Not reported	...	...	...	200	15 568	25 188	35 034	62 489	...	...	...	–	0.1	0.2	0.3	0.7
Median age	22.7	23.5	26.0	25.1	23.4	22.5	21.2	19.9	...	...	...	...	...	...	...	...
Male																
All ages	12 191 985	9 864 345	7 931 615	6 811 114	6 484 346	5 604 378	5 367 875	4 732 128	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Under 5 years	1 371 166	1 480 548	1 021 229	672 935	670 986	614 474	662 847	629 375	11.2	14.9	12.9	9.9	10.5	11.0	12.4	13.3
5 to 9 years	1 535 403	1 302 211	824 146	695 469	741 227	667 797	647 424	622 613	12.6	13.1	10.4	10.2	11.6	11.9	12.3	13.2
10 to 14 years	1 557 017	1 067 716	735 565	716 317	671 110	644 244	601 753	568 043	12.8	10.7	9.3	10.5	10.5	11.5	11.4	12.0
15 to 19 years	1 342 577	796 568	645 524	685 243	641 439	541 317	535 118	498 957	11.0	8.0	8.1	10.1	10.0	9.7	10.2	10.6
20 to 24 years	976 449	626 518	623 136	595 827	612 683	520 860	521 564	494 054	8.0	6.3	7.9	8.7	9.6	9.3	9.9	10.5
25 to 29 years	771 775	611 292	642 036	578 421	555 892	453 965	484 590	697 259	6.3	6.1	8.1	8.5	8.7	8.1	8.8	14.8
30 to 34 years	670 721	628 036	560 772	513 955	459 464	366 074	373 912		5.5	6.3	7.1	7.5	7.2	6.5	7.1	
35 to 39 years	628 048	632 679	579 570	505 594	465 116	419 793	356 627	476 100	5.2	6.3	7.3	7.4	7.3	7.5	6.8	10.1
40 to 44 years	624 316	558 843	511 437	434 219	374 330	309 224	259 400		5.1	5.6	6.4	6.4	5.8	5.5	4.9	
45 to 49 years	593 715	529 746	459 049	374 178	353 582	348 557	224 326	361 226	4.9	5.3	5.8	5.5	5.5	6.2	4.3	7.6
50 to 54 years	515 361	448 806	381 332	308 973	303 961	249 046	198 671		4.2	4.5	4.8	4.5	4.7	4.4	3.8	
55 to 59 years	454 900	398 646	285 123	227 346	192 771	143 574	127 097	200 156	3.7	4.0	3.6	3.3	3.0	2.6	2.4	4.2
60 to 64 years	379 729	287 655	214 884	170 856	146 313	123 537	111 206		3.1	2.9	2.7	2.5	2.3	2.2	2.1	
65 to 69 years	314 110	246 956	205 962	163 307	90 757	82 603	72 626		2.6	2.5	2.6	2.4	1.4	1.5	1.4	
70 to 74 years	207 648	166 866	118 852	89 769	55 563	50 987	43 249	141 164	1.7	1.7	1.5	1.3	0.9	0.9	0.8	3.0
75 years and over	248 475	181 259	122 998	78 577	60 627	53 675	47 028		2.1	1.8	1.6	1.2	0.9	1.0	0.9	
Not reported	...	...	...	128	8 525	14 643	20 434	34 183	...	...	...	–	0.1	0.3	0.4	0.7
Median age	21.5	22.7	25.9	25.3	23.9	23.1	21.7	20.3	...	...	...	...	...	...	...	...
Female																
All ages	13 271 966	10 827 098	8 244 554	6 996 184	6 402 641	5 513 548	5 148 234	4 639 530	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Under 5 years	1 360 031	1 481 801	1 015 174	677 577	676 821	620 015	667 097	635 313	10.2	14.1	12.3	9.7	10.6	11.2	13.0	13.7
5 to 9 years	1 523 418	1 302 027	826 952	702 002	748 607	670 669	655 050	623 967	11.5	12.4	10.0	10.0	11.7	12.2	12.7	13.5
10 to 14 years	1 551 334	1 066 884	728 018	722 141	674 084	647 182	598 511	560 931	11.7	10.1	8.8	10.3	10.5	11.7	11.6	12.1
15 to 19 years	1 357 411	814 446	680 365	725 689	690 861	592 460	571 966	524 795	10.2	7.7	8.3	10.4	10.8	10.7	11.1	11.4
20 to 24 years	1 112 745	703 464	719 300	685 433	677 068	591 974	567 107	527 135	8.4	6.7	8.7	9.8	10.6	10.7	11.0	11.4
25 to 29 years	893 304	702 247	713 911	645 680	598 091	509 567	477 106	666 693	6.7	6.7	8.7	9.2	9.3	9.2	9.3	14.4
30 to 34 years	792 278	732 320	631 865	547 406	472 733	384 723	351 386		6.0	7.0	7.7	7.8	7.4	7.0	6.8	
35 to 39 years	757 934	707 589	637 747	545 782	483 596	406 717	326 303	447 254	5.7	6.7	7.7	7.8	7.6	7.4	6.3	9.7
40 to 44 years	749 806	618 380	524 916	434 820	364 999	297 036	235 430		5.6	5.9	6.4	6.2	5.7	5.4	4.6	
45 to 49 years	677 582	564 577	462 537	361 997	320 584	240 994	193 217	305 861	5.1	5.4	5.6	5.2	5.0	4.4	3.8	6.6
50 to 54 years	586 800	463 620	370 598	279 973	238 127	177 956	152 762		4.4	4.4	4.5	4.0	3.7	3.2	3.0	
55 to 59 years	511 626	405 008	265 364	199 132	142 660	105 342	98 998	164 952	3.9	3.8	3.2	2.8	2.2	1.9	1.9	3.6
60 to 64 years	432 345	304 124	202 103	149 036	114 215	91 803	89 212		3.3	2.9	2.5	2.1	1.8	1.7	1.7	
65 to 69 years	378 461	271 730	218 533	150 357	75 999	63 625	58 218		2.9	2.6	2.7	2.1	1.2	1.2	1.1	
70 to 74 years	254 300	181 024	116 786	82 168	50 731	46 178	40 351	135 323	1.9	1.7	1.4	1.2	0.8	0.8	0.8	2.9
75 years and over	332 366	207 857	130 385	86 918	66 342	56 872	50 940		2.5	2.0	1.6	1.2	1.0	1.0	1.0	
Not reported	...	...	...	72	7 043	10 545	14 600	28 306	...	...	...	–	0.1	0.2	0.3	0.6
Median age	23.8	24.3	26.1	24.9	23.0	21.9	20.7	19.5	...	...	...	...	...	...	...	...

Source: 1970 PC(1)-B-1, table 53.

WORKSHEET 1

Sex Ratios by Race for 1910 and 19__

Race[1]	1910			19__		
	Population (in thousands)		Sex Ratio	Population (in thousands)		Sex Ratio
	Male	Female		Male	Female	
Total						
White						
Black						
American Indian						
Japanese						
Chinese						
Filipino						
Other Races						

1/ Note the distinction between selected descriptors of racial categories (i.e., "Negro" in 1970 becomes "Black" in 1980, and "Indian" becomes "American Indian").

Source:

WORKSHEET 2

Sex Ratio by Age Groups for _____: 19__

Age	Population (in thousands)		Sex Ratio
	Male	Female	
Total			
Under 5 years			
5 to 14 years			
15 to 24 years			
25 to 34 years			
35 to 44 years			
45 to 54 years			
55 to 64 years			
65 years and over			

Source:

WORKSHEET 3

Sex Ratios by Selected Geographic Areas for _____: 19__

	Population (in thousands)		Sex Ratio
	Male	Female	
Total[1]			
White			
Black			
Northeast			
White			
Black			
North Central			
White			
Black			
South			
White			
Black			
West			
White			
Black			

1/ A variation, if using only the U.S. summary volumes, would be to calculate sex ratios for urban/rural populations within each region rather than doing so for White/Black populations.

Source:

WORKSHEET 4

Sex Ratios for Selected Socioeconomic Characteristics for _____: 19__

Selected Characteristics	Population (in thousands)		Sex Ratio
	Male	Female	
Marital status[1]			
Married			
Other (single, widowed, divorced)			
Years of school completed[1]			
Elementary: 8 yrs.			
High School: 4 yrs.			
College: 5 yrs. or more			
Employed persons[1]			
Construction			
Manufacturing			
Public administration			

1/Information on the age characteristics of the population universe is available in the census tables.

Source:

List at least five different interest groups or businesses that would find sex ratios for marital status, education, and employment to be useful. Why?

- _____
- _____
- _____
- _____

WORKSHEET 5

Distribution of Population by Age Group in the United States: 1960-19__
(in percent)

Age	Year		
	1960	1970	1980
Under 5 years			
5-14			
15-24			
25-34			
35-44			
45-54			
55-64			
65 years and over			

Source:

WORKSHEET 6

Percentage of Change by Age Group in _____: 1960-1980

Age	Population (in thousands)			1960-1970 Change		1970-1980 Change	
	1960	1970	1980	Amount	Percent	Amount	Percent
Under 5 years							
5-14							
15-24							
25-34							
35-44							
45-54							
55-64							
65 years and over							
Total							

Source:

WORKSHEET 7

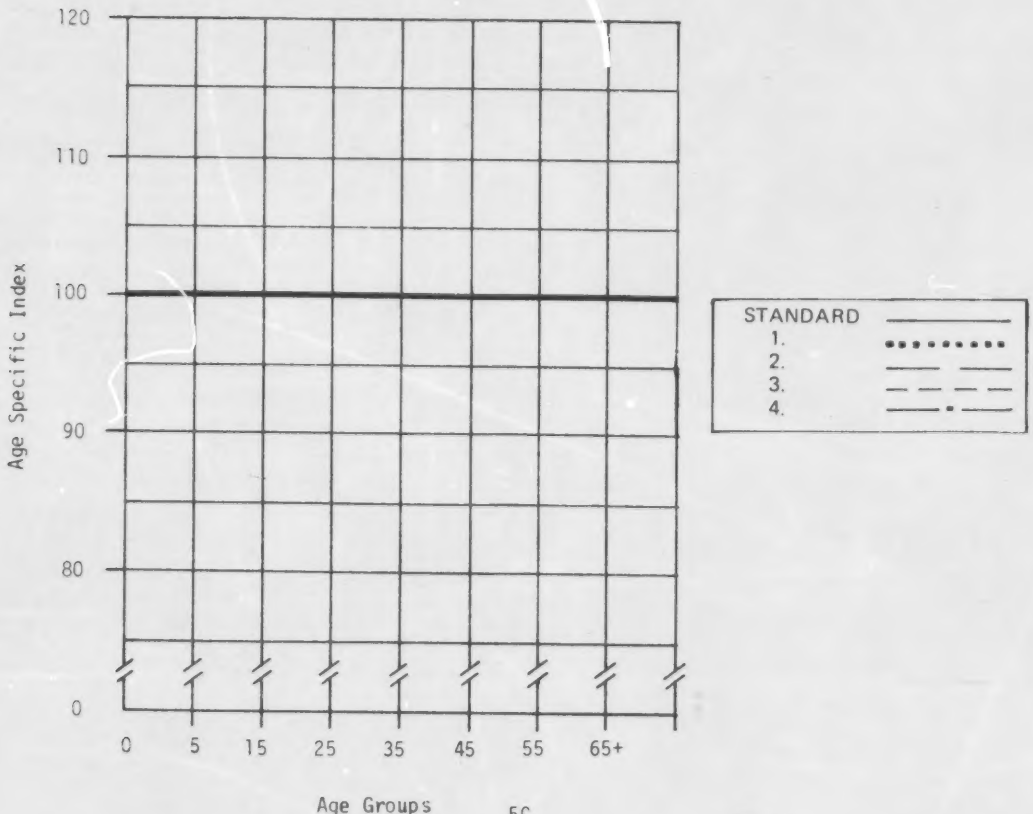
Calculations for Age Specific Indexes for _____:19__

Age	Percent of Total					Age Specific Index			
	NE	NC	S	W	U.S.	NE	NC	S	W
Under 5 yrs.									
5-14									
15-24									
25-34									
35-44									
45-54									
55-64									
65 yrs. and over									

Source:

WORKSHEET 8

Age Specific Indexes for _____: 19__



WORKSHEET 9

Dependency Ratios for the United States: 1880-2030

	Population (in millions)						
	1880[1]	1910	1940	1970	(1980)	2000[2]	2030[2]
Age							
Under 15 yrs.	19					57	60
15-64	29					171	185
65 yrs. and over	2					32	55
Total	50					260	300
Median age	20.9					35.5	39.9
Dependency ratios							
Child	66					33	32
Old-age	7					19	30
Total	73					52	62

1/ Source (1910-1970): 1970 Vol. I, U.S. Characteristics of the Population, part 1, table 51.

2/ Source (2000,2030): Current Population Report, series P-25, no. 704, "Projections of the Population of the United States 1977-2050." These ratios are based upon series 2 projections. The Census Bureau considers the assumptions used for series 2 projections to be "most likely."

4.2

WORKSHEET 10

Calculations for Population Pyramid for _____: 19__

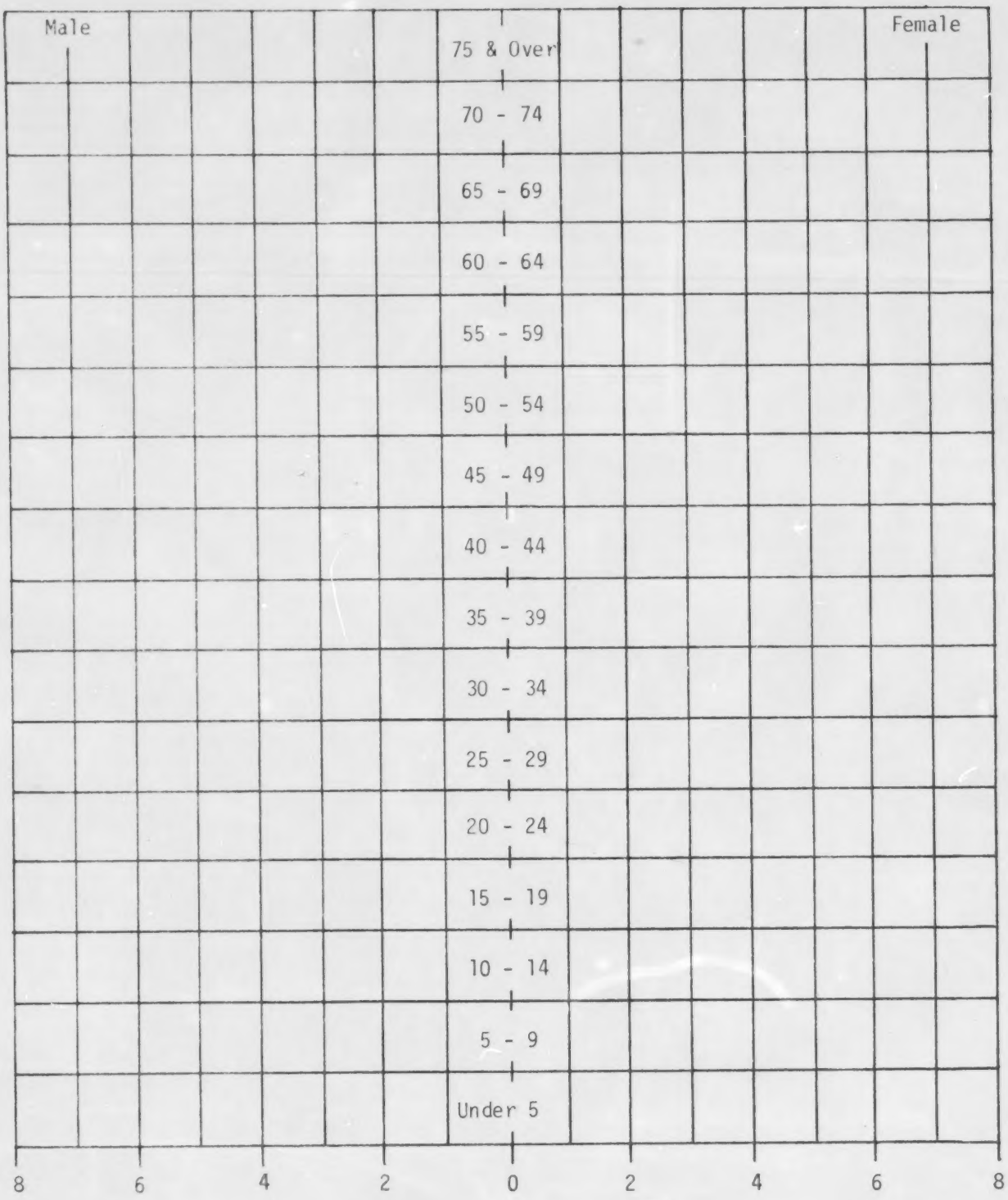
Total Population: _____

	MALE		FEMALE	
	No.	% of Total Population	No.	% of Total Population
Total				
Under 5				
5-9				
10-14				
15-19				
20-24				
25-29				
30-34				
35-39				
40-44				
45-49				
50-54				
55-59				
60-64				
65-69				
70-74				
75 & over				
MEDIAN AGE				
Percent				

Source:

WORKSHEET 11

Population Pyramid for _____: 19__



Source:

4.3

Using the Location Quotient to Compare Data

The location quotient is a valuable supplement to other measures of census data. It is the ratio of the relative frequency of a particular characteristic (or of involvement in a certain activity) in a certain part of an area (e.g., county) to the corresponding relative frequency for the entire area (e.g., State). Although the location quotient has usually been used to investigate the relative degree of industrial specialization for certain areas, this same procedure could be employed to study the relative concentration of other phenomena (e.g., racial or ethnic groups, age-sex groups, housing characteristics, and means of journey to work).

PROBLEM

1. Read the following description of the location quotient to become familiar with its use:

Suppose that within a particular county less than 5 percent of its workforce was employed in a particular industry. Although this may seem to be an extremely small proportion, a closer look at comparable data at the State level may reveal a statewide figure of 2 percent; thus, the county has a relatively large percentage when compared to its frequency elsewhere. The formula for calculating the location quotient (sometimes called the index of concentration) is:

$$\frac{Xc}{Nc} \Big/ \frac{Xs}{Ns}$$

where:
X = number involved in activity "A"
N = total number in all activities
c = county
s = State

If the location quotient is less than 1.0, it indicates that the characteristic is of less importance for the county than it is for the State. If the number is exactly 1.0, then the characteristic is of the same statistical importance. However, if the value is larger than 1.0, it indicates that the characteristic is of greater relative importance in the county than it is in the State. As an example, one would expect that Milwaukee County, Wisconsin, has a location quotient greater than 1.0 for the beer brewing industry relative to the State of Wisconsin. Presumably, the same phenomenon occurs for the metal and the transportation industries in the counties that include Pittsburgh and Detroit, respectively (relative to their States). To help you understand the location quotient a little better, the Milwaukee example will be examined in greater detail.

Using data from the 1970 census of population for Wisconsin (1970 PC(1)-51), industry information at county level was found in table 123, and comparable information for the State was located in table 55. Although it would be nice to find the exact number of persons employed in the brewing industry, the closest manufacturing activity was found to be "manufacturing-food and kindred products," for which information was available for "employed persons 6 years old and over."

As a result of this analysis, one can conclude from table 1 that manufacturing of "food and kindred products" is more highly concentrated within Milwaukee County than it is within the State.

TABLE 1

Location Quotient for Employment in Manufacturing-Food and Kindred Products for Milwaukee County, Wisconsin: 1980

Area	Employment	Percentage of Employment	Location Quotient
Milwaukee County	$\frac{X_C}{N_C} = \frac{15,580}{377,773}$	4.1%	1.37
Wisconsin	$\frac{X_S}{N_S} = \frac{50,719}{1,703,629}$	3.0%	

Source: 1970 PC(1)-51, tables 55 and 123.

2. Calculate the location quotient for two types of industrial employment by recording information from the 1970 census on worksheet 1.

a. Select the 1970 PC(1) reports for the State of your choice. Then, using the county map that is located in the volume, choose nine counties for which industrial employment characteristics will be examined.

b. Next, select two industrial classifications from the options listed in tables 55 (State) and 123 (county). Be certain that the proper columns and rows are selected by paying proper attention to the information provided in the boxhead and stub.

c. Based on your knowledge of the industrial characteristics of the areas selected, develop hypotheses regarding the counties that you believe will have the highest quotient; the lowest quotient.

d. Record the proper values from 1970 PC(1) on worksheet 1.

e. Complete the chart by calculating the location quotients for each county.

3. The location quotient is an interesting application of numerators and denominators with census data because it can be used at several geographic scales (e.g., place and State, census tract and SMSA, and State and Nation) and for several different problems (e.g., concentrations of race, ethnic groups, age-sex groups, and housing characteristics). List five questions that could be examined through use of this index (e.g., is the highest relative concentration of unemployed workers located in census tracts that are in or near the central business district?)

SUGGESTIONS FOR FURTHER WORK: Although the decennial census is an important source of employment data, particularly for small areas such as census tracts and places, another important source can be found in the County Business Patterns series. Published annually, this resource provides rather detailed information on establishments, payroll, and employment by industry classification and county location. In contrast to the industrial employment information located in the decennial census publications, where the data are estimated based on a sample of persons 16 years old and over, the data from County Business Patterns are collected on establishments by using the following data files:

- Internal Revenue Service payroll files
- Social Security Administration quarterly files (these data are used as an aid in editing the IRS records file)
- Bureau of the Census economic censuses and annual organization surveys

It is important to realize that the data do not represent the same population (e.g., the decennial data were collected to reflect the residence of the employee; whereas, the County Business Patterns (CBP) data reflect the location of the industry). Also, the CBP is published annually, and therefore its data are more current. As the following example shows, the CBP may be a more useful data set than the decennial census for many location quotient problems dealing with industrial concentrations.

1. Determine the most appropriate type of industrial activity for categorizing a beer brewery from the available entries listed under "food and kindred products" with the use of CBP for Wisconsin (see accompanying table).

2. What is the most detailed Standard Industrial Classification (SIC) code associated with beer brewing? List the two- and three-digit codes under which this code is located.

3. Compare the "food and kindred products" data for "Number of employees for week including March 12, 1978" (County Business Patterns) with those for "Total employed, 16 years of age and over" (1970 PC(1)-51) for Milwaukee County, Wisconsin. List at least three reasons, other than the difference in the year the data were collected, that might account for the 14,271 figure in the former data set and the 15,580 figure in the latter.

4. Examine the differences in the location quotient (tables 2 and 3) for SIC code 2082 (manufacturing-food and kindred products-beverages-malt beverages) with SIC code 20 (manufacturing-food and kindred products). What other "food and kindred product" activity, in addition to beer brewing, is Wisconsin noted for that might explain this extremely large variation in the location quotient?

TABLE 2
Location Quotient for Employment in Manufacturing-Food and Kindred Products-Malt Beverages (SIC code 2082) for Milwaukee County, Wisconsin: 1978

Area	Employment	Percentage of Employment	Location Quotient
Milwaukee County	$\frac{X_c}{N_c} = \frac{6,615}{449,789}$	1.5%	3.0
Wisconsin	$\frac{X_s}{N_s} = \frac{7,435}{1,557,232}$	0.5%	

Source: CBP-78-51, tables 1 and 2.

TABLE 3
Location Quotient for Employment in Manufacturing-Food and Kindred Products (SIC code 20) for Milwaukee County, Wisconsin: 1978

Area	Employment	Percentage of Employment	Location Quotient
Milwaukee County	$\frac{X_c}{N_c} = \frac{14,271}{449,789}$	3.2%	.89
Wisconsin	$\frac{X_s}{N_s} = \frac{55,859}{1,557,232}$	3.6%	

Source: CBP-78-51, tables 1 and 2.

5. Each of these two census publications from which these data come is careful to enumerate the limitations of the data in either the "general explanation" section or the appendix. Although procedures for calculating the amount of sampling error are provided in appendix C of 1970 PC(1), they are not given in the County Business Patterns. Why?

6. List two examples of nonsampling error that are common to both data sets.

7. Determine the location quotient for the seven counties identified earlier in this exercise by using the most recent County Business Patterns for your study area (they are published by State) and prepare a short paper to discuss the results of your study.

You should exercise caution in the selection of the exact industry to examine because only a few of the industries may be located in your counties. In addition, sometimes a precise value cannot be determined because data that may disclose the operational characteristics of an individual employer are not published. However, the number of establishments in a kind of business and their distribution by employment-size class are not

7.

considered a disclosure, and these items may appear in instances where other items of information, such as employment and payrolls, are withheld. In the Milwaukee County, Wisconsin, example, for instance, there are 250-499 persons (footnote E) employed by the dairy products industry (SIC code 202) of which number 20-99 (footnote B) are employed in the processing of natural or processed cheese (SIC code 2022) and 250-499 are employed in the fluid milk (SIC code 2026) industry. One can refine the employment figure for the fluid milk industry by subtracting out those employed in the production of natural or processed cheese; thus, "250-499" minus "20-99" equals "230-400."

COUNTY BUSINESS PATTERNS — WISCONSIN

Table 2. **Counties—Employees, Payroll, and Establishments, by Industry: 1978**—Continued

(Excludes government employees, railroad employees, self-employed persons, etc.—see "General Explanation" for definitions and statement on reliability of data. Size class 1 to 4 includes establishments having payroll but no employees during mid-March pay period. "D" denotes figures withheld to avoid disclosure of operations of individual establishments; the other alphabetics indicate employment-size class—see footnote.)

SIC code	Industry	Number of employees for week including March 12	Payroll ($1,000)		Number of establishments, by employment-size class									
			First Quarter	Annual	Total	1 to 4	5 to 9	10 to 19	20 to 49	50 to 99	100 to 249	250 to 499	500 to 999	1000 or more
	Nonclassifiable establishments	(A)	(D)	(D)	1	1								
	MILWAUKEE													
	Total	**449 789**	**1 372 059**	**5 [illegible] 2 008**	**19 368**	**9 504**	**3 851**	**2 693**	**1 919**	**784**	**372**	**137**	**53**	**55**
	Agricultural services, forestry, fisheries	397	767	4 782	98	69	17	13						
07	Agricultural services	(E)	(D)	(D)	98	69	17	13						
074	Veterinary services	122	336	1 514	18	5	1	4						
078	Landscape and horticultural services	165	239	2 195	60	49	5	6						
	Mining	67	267	1 338	8	4	1	3						
	Contract construction	15 563	64 020	296 307	1 248	700	241	152	103	37	9	3		
15	General contractors and operative builders	3 896	12 532	61 774	286	154	58	37	25	12	1	1		
151	General building contractors	2 712	11 756	57 133	186	79	40	30	24	11	1	1		
153	Operative builders	168	389	2 044	24	16	5	1	1	1				
16	Heavy construction contractors	725	3 200	21 236	57	31	9	11	7	1	1			
161	Highway and street construction	203	748	5 546	23	14	2	3	4					
162	Heavy construction, except highway	520	2 450	12 674	33	16	4	8	3	1	1			
17	Special trade contractors	11 782	48 288	213 297	903	515	176	104	71	24	7	2		1
171	Plumbing, heating, air conditioning	4 673	19 048	79 504	208	109	50	25	14	5	4			1
172	Painting, paper hanging, decorating	533	1 707	8 370	98	69	7	5	7					
173	Electrical work	1 918	9 673	38 884	90	39	19	10	18	3	1	2		
174	Masonry, stonework, and plastering	1 288	4 920	22 302	115	52	24	26	8	4	1			
1741	Masonry and other stonework	388	1 127	5 772	59	32	12	12	3					
1742	Plastering, drywall and insulation	801	3 380	14 476	46	14	10	13	5	3	1			
1743	Terrazzo, tile, marble, mosaic work	99	413	2 054	10	6	2	1	1					
175	Carpentering and flooring	752	2 505	10 867	134	85	34	8	6	1				
1751	Carpentering	512	1 800	7 158	94	60	25	4	5					
1752	Floor laying and floor work, nec	240	705	3 708	40	25	9	4	1	1				
176	Roofing and sheet metal work	1 053	3 798	20 595	99	54	16	15	9	5				
177	Concrete work	255	815	4 431	48	40	4		3	1				
178	Water well drilling	69	324	1 185	5	2	2		1					
179	Misc. special trade contractors	1 205	5 692	26 177	107	57	22	15	7	5	1			
1791	Structural steel erection	(B)	(D)	(D)	5	1		3		1				
1793	Glass and glazing work	153	526	2 207	11	2	6	2		1				
1794	Excavating and foundation work	155	609	3 149	28	19	6	1	2					
1796	Installing building equipment, nec	421	2 204	9 142	19	4	3	5	3	3	1			
1799	Special trade contractors, nec	348	1 847	9 210	41	28	7	4	1		1			
	Manufacturing	158 864	641 924	2 704 645	1 666	403	260	279	315	176	131	61	34	27
20	Food and kindred products	14 271	63 486	265 789	107	15	17	13	19	19	15	5		4
201	Meat products	1 979	7 968	36 864	26	5	4	3	6	4	3			1
2011	Meat packing plants	1 487	6 280	28 812	13	2	1	2	2	4	1			1
2013	Sausages and other prepared meats	(E)	(D)	(D)	13	3	3	1	4		2			
202	Dairy products	(E)	(D)	(D)	3			1		1		1		
2022	Cheese, natural and processed	(B)	(D)	(D)	1					1				
2026	Fluid milk	(E)	(D)	(D)	1							1		
203	Preserved fruits and vegetables	536	497	1 922	5	1		2	1	1				
2035	Pickles, sauces, and salad dressings	(C)	(D)	(D)	3			1	1	1				
204	Grain mill products	(E)	(D)	(D)	3	1		1				1		
2041	Flour and other grain mill products	(E)	(D)	(D)	1							1		
205	Bakery products	2 390	6 641	27 748	19		3	3	2	3	6	2		
2051	Bread, cake, and related products	(G)	(D)	(D)	15		1	3	1	3	6	1		
2052	Cookies and crackers	(E)	(D)	(D)	4		2		1			1		
206	Sugar and confectionery products	552	1 649	7 533	8	1	1	1		3	2			
2065	Confectionery products	(D)	(D)	(D)	6	1	1	1		3				
2066	Chocolate and cocoa products	(E)	(D)	(D)	2						2			
207	Fats and oils	(C)	(D)	(D)	5	2	1		1					
2077	Animal and marine fats and oils	(C)	(D)	(D)	3	1			1	1				
208	Beverages	7 731	41 417	159 691	21	2	6	1	2	1	3	1		1
2082	Malt beverages	6 615	37 152	152 116	3									1
2083	Malt	314	1 435	6 099	4	1				2	1			
2086	Bottled and canned soft drinks	714	2 507	10 771	10	1	5			1	2	1		
209	Misc. foods and kindred products	534	2 083	8 300	15	2	2		7	3	1			
2098	Macaroni and spaghetti	(B)	(D)	(D)	1					1				
2099	Food preparations, nec	526	1 988	7 401	11	1	1		5	2	1			
22	Textile mill products	544	1 711	5 467	12		3	1	4	1	3			
225	Knitting mills	756	1 512	7 121	6				2	1	3			
2253	Knit outerwear mills	(E)	(D)	(D)	3				1		2			
2257	Weft knit fabric mills	(E)	(D)	(D)	2					1	1			

A 0-19, B 20-99, C 100-249, E 250-499, F 500-999, G 1,000-2499, H 2,500-4,999, I 5,000-9,999, J 10,000-24,999, K 25,000-49,999, L 50,000-99,999, M 100,000 or more

Source: CBP-78-51.

73

WORKSHEET 1

Worksheet for Location Quotient Exercise

Subarea	Characteristic or SIC Code _____			Characteristic or SIC Code _____		
	Employment	Percentage of Employment	Location Quotient	Employment	Percentage of Employment	Location Quotient
1	Xc = Nc =			Xc = Nc =		
2	Xc = Nc =			Xc = Nc =		
3	Xc = Nc =			Xc = Nc =		
4	Xc = Nc =			Xc = Nc =		
5	Xc = Nc =			Xc = Nc =		
6	Xc = Nc =			Xc = Nc =		
7	Xc = Nc =			Xc = Nc =		
8	Xc = Nc =			Xc = Nc =		
9	Xc = Nc =			Xc = Nc =		
Major area	Xs = Ns =	$\frac{Xs}{Ns} \times 100$		Xs = Ns =	$\frac{Xs}{Ns} \times 100$	

Source:

5.1

Using Block Data To Plan Community Action

Planners in both the public and private sectors frequently find that their area for study does not always coincide with the exact boundaries of census tracts or other higher level geographic units found in census reports. One approach is to define the study area in terms of census blocks and to build data up to the desired area. This exercise uses the building block approach to fulfill a local information need.

PROBLEM: Inner City Development, Inc., is preparing a proposal to expand their project to provide low-cost housing for renters who wish to become homeowners. Your assignment is to provide housing and population characteristics on the target area they have designated.

This area is bounded by: _____

_____

_____

_____

_____

Using the data and maps that are located in the block statistics report, list each block in the target area on worksheet 1, record the values for the important variables in each column, and calculate totals, means, and percentages for the total area.

Summarize your findings in tabular form comparing the target area with the city as a whole. Prepare a report to accompany worksheet 2. The report should include the following:

1. Justification for your proposal using the information in your worksheet to contrast the target area with the city of which it is a part.

2. A map outlining the target area and showing its relationship to the city used for comparison.

3. References to the source materials used to conduct your study.

SUGGESTIONS FOR FURTHER WORK: If one were to compare 1970 and 1980 block statistics, one would be faced with three types of comparability problems: 1) bibliographic, 2) geographic, and 3) subject matter.

The bibliographic changes are the easiest to deal with. The 1970 block statistics report series was labeled HC(3). The corresponding 1980 series is labeled PHC80-1 (the PHC series is for reports containing both population and housing data).

Geographic changes are numerous. Many areas with blocks defined in both 1980 and 1970 have the same tract and block numbers. In other areas new street development, changes in mapping conventions, or redefinition of tracts or block groups results in changes to block numbers between 1980 and 1970. The only way of determining comparability or correspondence is to carefully examine the 1970 and 1980 maps side-by-side. There also are many areas with block statistics in 1980 that did not have them in 1970 (e.g., places of 10,000 or more outside urbanized areas).

Several subject matter changes can be observed by comparing the column headers for the 1970 and 1980 block statistics reports that are located on the next page.

1. List the items that are exactly the same in the two headers.

2. Two items are exactly the same although they may not appear to be. The 1970 items titled "units in one-unit structures" and "units in structures of 10 or more units" were incorrectly labeled. These data were actually based on "units at address" and are consequently directly comparable to two 1980 items. Describe a local example that illustrates the difference between the two concepts.

3. List items that are completely new for 1980.

4. List items that were included in 1970 but dropped for 1980. Can you infer why they were dropped?

5. One of the new items for 1980 is "Family householder, no spouse present, with persons under 18." Describe in nontechnical terms what types of families would be included in this definition.

6. List the items that are derivable for both years with a little bit of mathematical manipulation.

7. A few items have rough counterparts but are not completely comparable. List them.

TABLE 1

Categories Shown in 1970 Block Statistics (HC(3)) Report

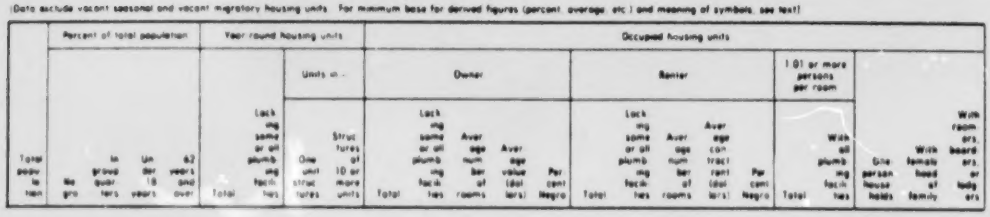
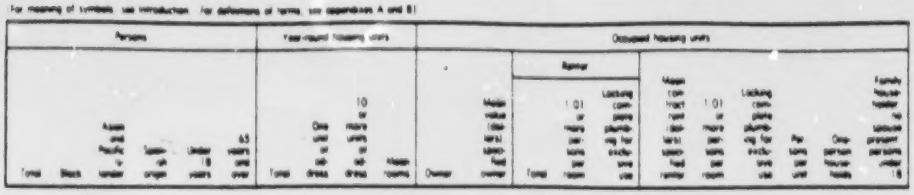


TABLE 2

Categories Shown in 1980 Block Statistics (PHC80-1) Report



Sample answers:

1. Total population, total year-round housing units, owner-occupied units, averaged value, renter-occupied units, average contract rent, occupied units with 1.01 or more persons per room, and one-person households

2. An apartment building with more than one entrance may have separate street addresses for the apartments associated with the different addresses

3. Asian and Pacific Islander; Spanish origin; population 65 years old and over; renter-occupied units with 1.01 or more persons per room; family householder, no spouse present with persons under 18 present

4. Percent Negro, average number of rooms for both owner- and renter-occupied housing units; total occupied units with 1.01 or more persons per room; units with female head of family; units with roomers, boarders, or lodgers

5. A single parent

6.

Item	1980	1970
Percent Black (Negro)	Black/total population	Posted
Percent under 18 years	Under 18 years/total population	Posted
Owner-occupied units lacking plumbing facilities	Occupied housing units lacking plumbing facilities minus renter-occupied units lacking plumbing	Posted
Persons per unit	Posted	(100% minus percent in group quarters) x total population/(owner-occupied units + renter occupied units)

7.

Item	1980	1970
Persons 65 years and over	Posted	Persons 62 years and over
Occupied units lacking complete plumbing	Posted	Owner-occupied + renter-occupied housing units lacking some or all plumbing facilities
Average number of rooms for year-round units	Posted	Average number of rooms for occupied housing units, approximated from owner/renter figures
Year-round units lacking some or all plumbing facilities	Occupied housing units lacking complete plumbing	Posted

WORKSHEET 1

Selected Population and Housing Statistics for the Target Housing Area in _____: 1980

Geography		Population			Housing								
Census Tract No.	Census Block No.	Total N=	Under 18 Years[1] N=	Under 18 Years[1] Percent	Year-round Units N=	Owner-occupied Units N=	Average Value (x $1000)	Approximate Aggregate Value[2] (x $1000) (E x F)	Renter-occupied Units N=	Average Contract Rent $	Approximate Aggregate Contract Rent[3] (H x I)	One-Person Households N=	Occupied Units Lacking Plumbing Facilities[4] N=
		A	B	C	D	E	F	G	H	I	J	K	L

1/ If 1970 data are used, post the percentage under 18 to column C, then compute column B as (C x A)/100 (approximate).

2/ Aggregate and average value figures are only approximations since the total number of owner-occupied units includes mobile homes, condominiums, and certain other types of units not included in the average figures in column F.

3/ Aggregate and average contract rent figures are only approximations since the total number of renter-occupied units includes rental properties on 10 acres or more and units without cash rent, which are excluded from average rent figures in column I.

4/ If 1970 data are used, change to year-round units lacking some or all plumbing facilities.

WORKSHEET 2

Summary Population and Housing Statistics for the Target Housing Area and Central City of _____: 1980

Summary Statistics	Target Area	Central City
Population		
Total		
Percent under 18 years		
Housing		
Total year-round units		
Total occupied units		
Percent owner occupied		
Approximate average value of owner-occupied units		
Approximate average value of contract rent		
Percent lacking plumbing facilities		
Percent one-person households		

Derived Variables (see the footnotes on worksheet 1).

Under 18 years (%)[1/] = B/A x 100

Occupied units = E + H

Owner-occupied units (%) = E/(E + H) x 100

Approximate average value[2/] = G/E

Approximate average contract rent[3/] = G/E

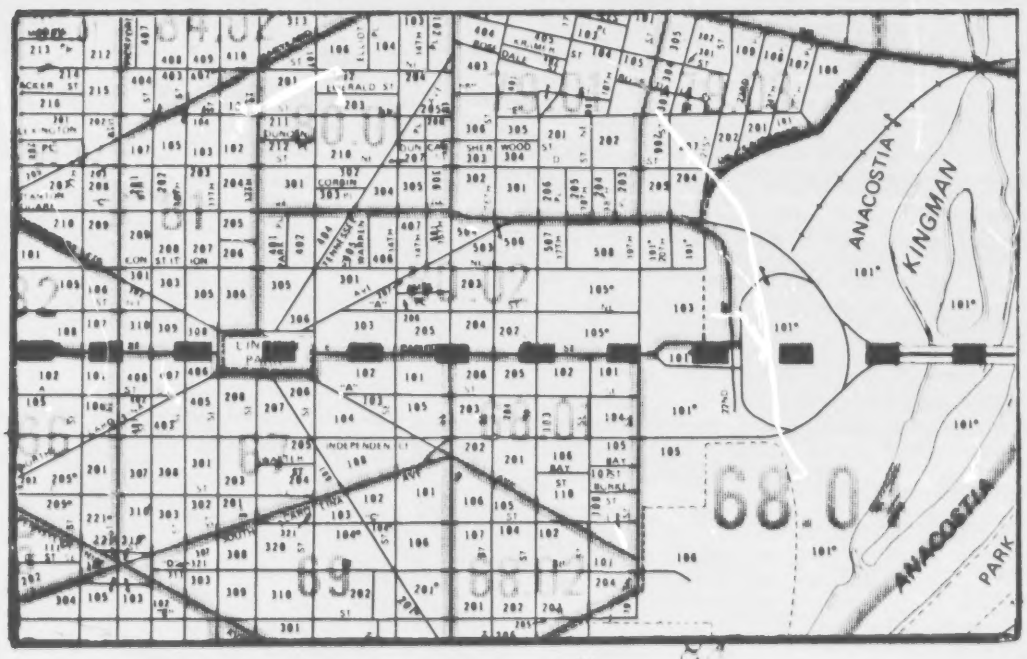
One-person households (%) = K/(E + H) x 100

Lacking plumbing facilities (%) =

(1980) L/(E + H) x 100

(1970) L/D x 100[4/]

Sample Block Statistics Map from PHC80-1



5.2

Combining Census and Public Opinion Data To Solve Community Problems

Researchers frequently find themselves in a dilemma: the constraints of time and money require that they merge data from highly divergent sources to solve the problem at hand. This exercise requires that you examine the findings from a national study to solve a local problem.

PROBLEM: The local chapter of a conservation organization has been charged by a reform group as being a "WASP, sexist, elitist pressure group" that cares more for birds and swamps than it does for people. Your firm has been hired by the conservation group to help them understand its "people problem" and to advise them as to how they can combine their traditional conservation interests with a genuine concern for human issues. Like all clients, this one is in a hurry for the answers. Your group only has time to gather together the data that are available from the most recent census of population (use either 1970 PC(1)-B and -C or PC80-1-B and -C) for the counties and places that make up the local chapter and the information from a national survey (tables 1 and 2).

1. Procure a map of the following counties and places that are included in the local chapter:

Counties	Places

2. Describe the demographic trends in the area with the aid of census data.

3. Identify the places and population segments most likely to be supportive, neutral, and negative on the conservation issue.

4. Provide your client with specific advice on:

   a. A strategy for minimizing the charge of the reform group

   b. The means for reaching potential members

   c. Some activities that can join conservation issues to local social problems

5. Prepare an outline for your own use in an oral presentation.

TABLE 1

Attitudes Toward Conservation

	Concern About Our Natural Surroundings[1] (in percent)				Willingness To Pay Taxes to Improve Surroundings[2] (in percent)				
	Deeply Concerned	Somewhat Concerned	Not Very Concerned	No Opinion	Small Amount	Moderate Amount	Large Amount	None	Don't Know
National Results (N=1503)	51	35	12	2	51	18	4	9	18
By sex									
Men	56	31	10	3	49	21	6	9	15
Women	46	38	14	2	53	16	2	9	20
By age									
21-34 years	51	41	7	1	53	25	5	5	12
35-49 years	50	38	10	2	52	20	3	8	17
50 years and older	52	28	16	4	49	13	4	12	22
By education									
College	62	32	6	3/	45	30	12	5	8
High school	52	37	10	1	52	20	2	9	17
Grade school	39	34	20	7	54	6	1	12	27
By annual family income									
$10,000 and over	58	34	8	0	45	28	10	6	11
$7,000-$9,999	53	38	8	1	52	20	3	10	15
$5,000-$6,999	55	35	8	2	59	15	2	8	16
Under $5,000	41	34	20	5	52	10	1	11	26
By size of community									
1,000,000 and over	51	36	8	5	52	19	5	4	20
250,000-999,999	52	35	11	2	43	28	6	8	15
50,000-249,999	55	35	9	1	53	16	2	12	17
2,500-49,999	52	31	16	1	49	18	4	12	17
Under 2,500	46	37	14	3	56	13	2	9	20
By region of country									
East	46	38	12	4	49	17	6	9	19
Midwest	56	34	9	1	56	19	3	11	11
South	44	36	16	4	51	15	3	6	25
West	59	31	10	3/	47	24	3	9	17

1/ You may have heard or read claims that our natural surroundings are being spoiled by air pollution, water pollution, soil erosion, destruction of wildlife, and so forth. How concerned are you about this situation--deeply concerned, somewhat concerned, or not very concerned?

2/ How much would you be willing to pay each year in additional taxes earmarked to improve our natural surroundings--a small amount such as $10.00 or less, a moderate amount such as $50.00, or a large amount such as $100.00 or more?

3/ Less than half of one percent.

Source: George Gallup, 1969.

TABLE 2

Importance of Environmental Problems (in Percent)

	Air Pollution	Water Pollution	Pesticides	Open Green Space Preservation	Wildlife Preservation	Soil Erosion	Don't Know
National Results	36	32	7	6	5	4	10
By sex							
Men	33	36	6	4	6	6	9
Women	40	27	8	7	4	3	11
By age							
21-34 years	42	32	3	7	6	2	8
25-49 years	39	32	6	7	4	3	9
50 years and over	31	31	11	4	5	6	12
By education							
College	40	34	5	8	4	3	6
High school	39	31	8	5	5	4	8
Grade school	29	31	7	4	7	5	17
By annual family income							
$10,000 and over	42	32	6	9	3	3	5
$7,000-$9,999	42	32	7	5	5	1	8
$5,000-$6,999	36	33	6	5	7	5	8
Under 5,000	28	30	8	3	7	7	17
By size of community							
1,000,000 and over	55	22	6	6	1	2	8
250,000-999,999	41	33	5	5	3	4	9
50,000-249,999	41	32	5	5	3	4	10
2,500-49,999	29	34	8	8	6	4	11
Under 2,500	23	34	10	6	10	5	12
By region of country							
East	43	31	5	6	3	2	10
Midwest	34	38	6	5	5	4	8
South	26	30	10	6	7	6	15
West	47	24	6	6	6	5	6

1/ In this country, which one of these (respondent is shown a card) do you think is the most pressing problem connected with our natural surroundings?

Source: George Gallup, 1969.

5.3

Allocating State Money for Poverty Areas

Decisionmakers in planning and economic development agencies need to target areas of need in an efficient and defensible manner. This exercise provides experience in using census data as a statistical resource for making these tough decisions.

PROBLEM: You are a member of a State task force on race and poverty and have been asked to analyze the State. On the basis of this analysis, you are to make recommendations for the allocation of money for counties within the State. Policymakers in the government have made initial suggestions for you to aid in determining the counties that can qualify for aid. (If the 1980 general social and economic characteristics volume (PC80-1-C) is not yet available, use the counterpart 1970 report (issued by State).)

- They suggest that the counties chosen be those in which the median family income is in the fifth (lowest) quintile of counties based on median family income.

- Because of limited funds no more than six counties may be chosen. Since there will probably be more than six counties that meet the above criteria, you will need to make decisions to include some areas while excluding others. For example, you may use unemployment as a further criterion and decide to select counties in which unemployment is the greatest problem. Or you may decide to target areas in which you suspect that the greatest amount of discrimination or other special barriers to advancement exist. You might even try to pick six eligible counties that together form a contiguous and compact area.

The government agency, in order to correlate your findings with those of other workers, needs the following data for the composite of each of your six recipient counties.

1. Income, percentage of adults who are high school graduates, race and ethnic composition, family size or other fertility measures, percentage of males and females in the labor force, a description of the unemployment situation, and some data on manufacturing as a source of employment in each county (table 123 in 1970 PC(1)-C report).

2. A graphic presentation of the age and sex structure of either a) the entire population of the area or b) the people who are moving into and out of the area. If you select "a," you will need to locate and use the appropriate State volume of the census of population. If you select "b," you will need to use the special volume "Gross Migration by County: 1965-1970" (series P-25, no. 701).

3. A map of the six recipient counties that you define.

The government agency also needs written answers to the following questions:

- If there were more than six counties that fit the above criteria in item 1, how did you decide which of those were to receive aid?

- How could the money be best used in this area: what specific program would you recommend that would have the greatest long-term impact on the well-being of the counties in your area? (Assume that your State will spend 4 million dollars for this program.)

- Based upon the analysis of the data, are there specific groups (e.g., elderly) that should be targeted with the program?

- Is there other relevant data information that should be known: what cautions would you have concerning the data you present?

After your research has been completed, you are to present the recommendations to the agency (the rest of the class) for discussion.

Wards for Abbeyville

Political representation among interest groups is an important consideration in local government. In this exercise, you will be working with Irene Saucedo, an Administrative Assistant to the Assistant City Manager (Brad Brown), in developing a single-member district (ward) system to replace the current at-large system for electing members of the city council in Abbeyville, Texas. Many cities like Abbeyville have been forced to develop a ward system as a result of public pressure or court action.

Session 1

Irene Saucedo has been working for the Office of the City Manager in Abbeyville for about 6 months. One day Brad called Irene in for a conference and said, "Irene, you probably know that legal action is pending in the courts to force the city to amend its charter to set up a ward or district system for electing city council members in place of the present at-large system. Judging by what has happened elsewhere, it appears that the city will probably lose the case and be mandated by the court to establish wards. The Mayor feels that we should anticipate such court action and have a plan ready to implement as soon as possible after the final decision on the case. I've decided that you are the best qualified person to work on this job because of your background.

"Because this is such an important assignment, I want you to work very closely with me; I will expect you to keep me informed as your ideas evolve, and I will do everything possible to help you develop your plan. By the way, the mayor expects the court to decide the case in about 60 days, so that doesn't leave much time. Any plan developed in this office will have to be submitted to the mayor and city council for approval before it goes to the judge; so, we will probably need your proposal in about 30 days!"

"I'm flattered that you chose me for this job," responded Irene, "but I'm not sure if I know exactly where to start. Do you have any suggestions?"

Instruction A: *Place yourselves in the situation above. How would you begin to work on this project? What would be your first step? Discuss these questions in your group and, when you have reached a consensus, have a secretary write it down and call your instructor over to review your conclusion.*

Session 2

Feedback A: "I think you would save a lot of time and effort if, at the outset, you were to clearly identify the objectives of the project," said Brad. "If you like, why don't you think about this for a few minutes and then write down what you think the establishment of a ward system in Abbeyville should accomplish. Meanwhile, I'll run down to my office where I have a publication that indicates the objectives of ward plans as set by the courts in similar cases."

Instruction B: *Discuss in your group what you think the objectives of the ward system should be. You may decide that there is only one objective, or you may identify several. Whatever your group's conclusions are, select someone to record your deliberations, noting all suggestions made during the discussion and identifying those finally agreed upon.*

Session 3

Feedback B: After considering the problem for a few minutes, Irene decided that the one overwhelming objective for the establishment of a ward system would be to assure that minority candidates could be elected to the city council, thus guaranteeing representation for the Black and Spanish origin elements of Abbeyville's population. She indicated this to Brad when he returned.

"I think you have identified the primary objective of establishing ward systems to replace at-large election of municipal officials. However, there are some other considerations that need to be taken into account as well as those outlined in the article," Brad continued. "Here is an article that details the reasoning of the courts in making their decisions in several cases in Texas. I have deleted certain portions of the article to make it more comprehensible for our city council members. I think you should read it before you proceed any further with your project. Once you have read the article, "Ward Elections in Texas Cities" (p. 68-69), you will want to consider the limitations under which you must work in developing your project--these are referred to as constraints. You may also want to think about the facts and assumptions related to the project--assumptions are conditions that you can't verify but that you believe to exist and that must be considered as you work toward a solution. For example, the entire rationale of the establishment of a ward system is based on the assumption that members of a minority will vote for a candidate from their group. If this assumption were not to hold up, there would

be much less reason to move away from at large election of city council members."

Instruction C: *Make up a list of constraints, facts, and assumptions that apply to the problem of developing a ward system for Abbeyville. Be sure to identify each item on the list as a constraint, fact, or assumption. Read the article on pages 68-69 before you begin work on this list.*

Session 4

Feedback C: Having read the article on ward elections in Texas cities, Irene was ready to consider the constraints, facts, and assumptions of the problem. She wrote out her ideas and presented them to Brad.

"The courts have indicated that any ward system must be set up so as to avoid barring members of any minority group from being elected to office. They have also insisted that the one-person-one-vote rule be enforced and that wards be set up so as not to overly concentrate or split up ethnic minorities. Following this approach means that you will have to be very careful to determine exactly where the minority groups reside in the city so that they can be accounted for in the plan. Furthermore, wards should be made up of contiguous units--that is, all the area in any ward should be contained within the same set of boundaries without any outliers or inliers (exclaves or enclaves). You should also try to have the new wards follow existing precinct boundaries where practical in order to avoid undue confusion. Politically, it will be helpful if the plan could be set up in such a way that incumbents don't have to run against each other, although it seems doubtful that this will be possible, given the other constraints under which we will be operating. I see these as major constraints--along with time, which may turn out to be a problem if we have trouble obtaining data."

"As for facts," Irene went on, "clearly, we must deal with the actual distribution of population in Abbeyville, considering both the total population distribution and that of Blacks and persons of Spanish origin. The location of incumbents' homes and existing precinct boundaries are facts that you will need to consider."

"There don't seem to be very many assumptions in this case. I suppose that the plan will be predicated on the assumption that the courts will not deviate far from their earlier decisions and also on the idea that the city council will be amenable to a well-thought-out plan, even if it works to the disadvantage of some of the members," concluded Irene.

Instruction D: "I think you have a pretty good idea of what needs to be taken into account in developing your plan," mused Brad. "You seem to be ready to begin collecting the data that you will need. Have you thought about what you will have to obtain and where you can get it?"

Your group should now begin to list the types of data Irene will have to have on hand for her study. You should also indicate for each item of data a possible source where such information might be acquired.

Session 5

Feedback D: Irene decided that she would need the following data for her project:

1. Population data from the 1980 census. Block data are available for the total population for Blacks and for persons of Spanish origin from the United States Census Bureau and can be located at the office of city planning or in the documents department of the university library.

2. A map showing the current election precincts in Abbeyville would be required. This document could be obtained at city hall or from the tax office in the county court house.

3. Data showing the number of registered voters by precinct would be useful, as would figures on the turnout for recent elections. Such information might be available at city hall; if not, it could be obtained from back issues of the local newspaper.

4. Data from earlier censuses, especially the 1970 census, might be useful in determining trends in population movement over time. That way, provision could be made to accommodate probable ethnic shifts in transitional areas. These data would be available at the city planning office or in the university library.

5. Estimates of population in rapidly growing areas or newly annexed portions of the city would be useful if they could be obtained. The office of city planning should be a good place to start one's search for such data.

6. Home addresses of the four incumbent council members and the mayor. These can be obtained from the telephone directory, city directory, or city officials at city hall.

Brad, looking over Irene's list commented: "You have indicated all of the essential items of information that seem to be needed. The only thing that you haven't mentioned might be school enroll-

ment data. Such data could be helpful in estimating changes in the population distribution since the 1980 census. By the way," continued Brad, "the office of city planning has a copy of the 'P.L. 94-171 Population Counts' for our city. Because Public Law 94-171 was mandated by Congress to provide 1980 census counts for legislative reapportionment/redistricting purposes, I believe that this information will serve as the best data source for your problem."

Instruction E: Review the information provided in table 1. Do you detect any problems that will need to be resolved. Pay particular attention to the boxheads.

TABLE 1

Excerpt of the P.L. 94-171 Population Counts for Abbeyville, Texas: 1980

Census of Population and Housing, 1980--P.L. 94-171 Counts (for definition of items and footnotes, see technical documentation)								
Precinct	Area Name	Total Population	RACE					Persons of Spanish Origin (1)
			White	Black	American Indian, Eskimo and Aleut	Asian and Pacific Islander (1)	Other (2)	
4000	Precinct 1	4480	2765	86	15	4	1610	3387
4005	Precinct 2	4856	3447	438	16	7	948	1925
4010	Precinct 3	6636	4415	139	7	91	1984	4118
4015	Precinct 4	4735	2945	411	22	13	1344	3225
4020	Precinct 5	1721	650	403	-	1	667	1079

Session 6

Feedback E: Irene was pleasantly surprised to find that the counts were already summarized by the city's election precincts. She had thought of the city's population as being divided into just three groups (Anglo, Black, and Spanish), but the census data presented a more complex picture.

Not only were there more groupings (White, Black, American Indian, Eskimo, Aleut, Asian and Pacific Islander, and other races and persons of Spanish origin) than she wanted to use (table 1), but it was impossible to add the race group totals to the total of persons of Spanish origin without arriving at a number that was larger than 100 percent (table 2).

Instruction F: Carefully 1) read the information provided by the Bureau of the Census to help explain these problems (page 70) and 2) prepare a plan so that the racial and ethnic groups, as presented by the Census Bureau, can be reduced to meet Irene's needs for three categories: Anglo, Black, and Spanish.

TABLE 2

Population by Race and Spanish Origin For Abbeyville, Texas: 1980

Race or Ethnic Group	N=	%
Total	157,318	100.0
White	124,907	79.4
Black	13,706	8.7
American Indian, Eskimo, and Aleut	369	.2
Asian and Pacific Islander	1,283	.8
Other	17,053	10.8
Total	157,318	100.0
Persons of Spanish Origin	32,123	20.4
Persons not of Spanish Origin	125,195	79.6

Ward Elections in Texas Cities

Throughout the United States the municipal reform movement has firmly implanted the at-large election of city councilpersons in 63 percent of the communities with populations greater than 10,000 with even greater usage in the South and the West. The predominating preference for at-large elections in Texas cities, like elsewhere, reflected the belief that ward politics perpetuated parochial interests and produced less than capable candidates.

The use of at-large elections is changing, however, where racial minorities are successfully challenging this form of electoral system in federal courts as a violation of the 14th and 15th amendments to the national constitution. These electoral changes are increasingly affecting municipalities in Texas. Elections have already been held under court-ordered, mixed ward at-large plans in Dallas, Waco, and Nacogdoches and in Palestine following an out-of-court settlement. Elections in Tyler under a mixed ward plan followed an agreed order by U.S. Federal District Judge William Steger for the Eastern Federal District Court of Texas. In Paris, elections have been held under a complete ward plan. Only in Amarillo has a Texas city successfully withstood a court challenge to its at-large electoral system with all appeals exhausted.

The successful suits have led to electoral charter changes in other Texas municipalities with the necessary preclearance approval obtained from the U.S. Department of Justice. Mixed ward systems have been adopted by charter change in Fort Worth, San Antonio, San Angelo, McKinney, and Jacksonville.

The challenge to at-large elections is not the traditional one-man-one-vote challenge, however, the question is not whether one man's vote is equal to another's, but whether or not one person because of his race is prevented from affecting the electoral process leading to nominations and election more than some other person.

Second, the successful challenge to the use of multimember districts of the Texas legislature in White v. Regester (1973) has had a direct bearing on the municipal at-large question. In Regester, the U.S. Supreme Court affirmed the federal district court's judgment that the use of multimember State legislative House districts for Dallas and Bexar counties invidiously discriminated against cognizable racial and ethnic groups. The U.S. Supreme Court said that an at-large election was subject to constitutional challenge when, under the circumstances of a particular case, it operated to minimize or cancel the voting strength of racial or political minorities within the voting populations. The Regester case had immediate and direct bearing upon the Dallas, Waco, Nacogdoches, and Lufkin cases.

Third, the judicial challenge to at-large elections in Texas must also be looked upon as simply another event in a long-continuing struggle to democratize institutions as evidenced by the judicial invalidation of the white primary, the poll tax, restrictive voter registration requirements, and the extension of the Voting Rights Act to Texas. Recent successful county reapportionment suits in East Texas have continued those democratization trends.

Furthermore, following the Regester decision the number of Blacks elected to the Texas House of Representatives increased from two to eight. Among the newly elected Black State representatives was Paul Ragsdale, a native of Jacksonville. Upon election, Mr. Ragsdale embarked upon his "East Texas Project," which is seeking to bring about reapportionment in 42 counties in East Texas.

When courts have found particular at-large systems constitutionally defective, they have recognized the necessity of allowing the affected legislative body the opportunity to fashion the single-member electoral plan. In fashioning municipal ward plans the one-man-one-vote rule must be adhered to as well as the population variance standard set in Mahan v. Howell and in White v. Regester. Furthermore, the courts have been concerned about the possible diluting effects of the offered plan and whether or not the proposed plan overly concentrated or split concentrated population groupings of minorities.

The courts have also had to decide whether to approve mixed ward plans with a mayor elected at-large rather than a total ward electoral plan. The U.S. Supreme Court has repeatedly reaffirmed the rule that, when federal district courts fashion reapportionment plants, single-member districts are preferred absent unusual circumstances. If a federal district court departs from the favored system, it must demostrate that there are special circumstances mandating the choice. According to the 5th Circuit Court of Appeals the special circumstance "encompasses only the rare, the exceptional, not the usual and diurnal." The preference for single-member districts, however, could yield to an at-large district if the latter would afford minorities a greater opportunity for participation in the political process.

Designing Ward Plans

Designing nondiscriminatory electoral plans that contain wards essentially equal in population would at first glance appear to be an unchallenging task. The task becomes challenging, however, because of the reliance upon census data, because many of the participants in ward controversies prefer wards that reasonably resemble existing neighborhoods or communities, and because of the involvement of individuals who have a political stake in the design of the wards.

The fundamental difficulty rests with the reliance upon census data as the judicially acceptable

source for population information. Census data are provided by blocks only in urbanized areas, in other places of 10,000 or more, and in additional areas which contracted for block statistics. Elsewhere, census data are provided only for enumeration districts (ED's). Those ED's typically do not reflect any contemporary existing community, and, since they are not divided into smaller population units, it is more difficult to create equally populated wards.

If wards in non-SMSA's are to be equally populated and also reflect existing neighborhoods, the ED must be divided using basic field techniques. The basic field work consists of counting residential units and multiplying by the average number of residents per household in the ED as supplied again by the census data. The field worker must determine the racial composition of the neighborhood. These field techniques were used in the Nacogdoches, Jacksonville, and Palestine cases and were accepted by the federal courts.

Data from the 1980 census cannot correctly reflect a community or neighborhood's population some years later if a neighborhood has changed radically or if an annexation has occurred since 1980. If annexation has occurred in that time period, the 1980 census population for that area can be used to update the city's total population. Although that procedure poses no problem where block data are available, ED's are unlikely to match annexed areas, and thus field work is again necessitated. Of course, population updates can be made through a contracted special census if a city is willing to bear the expense; but, even then, time constraints may make that prohibitive in a legal suit.

Court-ordered plans involving Texas municipalities always have had at least one ward with a majority of Blacks and/or Mexican Americans in it. Although a racial majority may exist in that district, the voting strength of those minorities may be exaggerated when one considers the average age of minorities and their numbers among those registered to vote.

Although it would appear that a ward must have a sizeable majority of a racial minority for a minority to be elected, that has not been the case in Texas cities with ward elections. In the 7 wards with Black majorities in Dallas, Tyler, Waco, Paris, and Nacogdoches where ward elections have been held, a Black has won election in every instance with the Black population ranging from 53 percent in a Tyler ward to 87 percent in a Dallas ward.

Finally, even with federal court guidelines at the remedy stage, political considerations may still surface in the drawing of the electoral plan. Even when court requirements are met, the electoral interests of plaintiffs, friends and associates of plaintiffs, incumbent councilpersons, or friends and associates of incumbents can still be reasonably protected. In Tyler, an electoral plan was agreed upon only after district boundaries were changed to protect an incumbent White councilperson and to assure that two likely Black candidates would be in a ward heavily populated with Blacks.

Conclusions

Even with electoral changes occurring, there are still lingering doubts whether or not a ward system will correct the "evils" of the at-large system. Interestingly, rather than eliminating racial voting, ward elections are more likely to intensify it because of the racial composition of the wards created. It is not unreasonable to believe that the change to a ward system will not greatly affect the delivery of services to minorities unless they are in control of the council--and that situation has not occurred in any Texas city. Besides, there are reasons to believe that the electoral system itself is not the predominant determinant of expenditure patterns. Evidence is already being accumulated to suggest that ward elections will lead to the demise of city-slating organizations. That is already occurring to the Citizen's Charter Association in Dallas and the newly created Alliance for a Better City group in San Antonio--a surrogate of a once-powerly businessman's group. In fact, in San Antonio, ward elections have increased the influence of neighborhood groups in the electoral process.

Ward elections have also led to more heterogenous councils. Blacks have been elected in Dallas, Tyler, Waco, Paris, Nacogdoches, Palestine, and San Antonio, and Mexican-Americans have been elected in San Antonio and Waco. Ward elections have also contributed to the youngest city councilman in the history of Paris and to occupational representation uncommon on Texas city councils.

1/ Adapted from Ronald G. Claunch and Leon C. Hallman, "Ward Elections in Texas Cities," The Municipal Matrix (North Texas State University Center for Community Studies) 10(1) (March 1978): 1-5. Statements related to the availability of tract, block, and ED data have been updated to reflect data available from the 1980 census rather than from the 1970 census.

Excerpts From the Documentation That Accompanied the P.L. 94-171 Report

Information on race was obtained through self-identification; therefore, the data represent self-classification by people according to the race with which they identify themselves. Population counts in this report are shown for five racial groups: White; Black; American Indian, Eskimo, and Aleut; Asian and Pacific Islander; and other.

The category "White" includes persons who indicated their race as White, as well as persons who did not classify themselves in one of the specific race categories listed on the questionnaire but entered a response suggesting European origin such as German, Italian, or Polish. (In the 1980 census, persons who did not classify themselves in one of the specific race categories but reported entries such as Cuban, Puerto Rican, Mexican, or Dominican were included in the "other" races category; in the 1970 census, most of these persons were included in the "White" category.)

The category "Black" includes persons who indicated their race as Black or Negro, as well as persons who did not classify themselves in one of the specific race categories listed on the questionnaire but reported entries such as Jamaican, Black Puerto Rican, West Indian, Haitian, or Nigerian.

The category "American Indian, Eskimo, and Aleut" includes persons who classified themselves as such in one of the specific race categories. In addition, persons who did not report themselves in one of the specific race categories but reported the name of an Indian tribe were classified as American Indian.

The category "Asian and Pacific Islander" includes persons who indicated their race as Japanese, Chinese, Filipino, Korean, Asian Indian, Vietnamese, Hawaiian, Guamanian, or Samoan. Persons who did not classify themselves in one of the specific race categories but reported entries indicating one of the nine categories listed above were classified accordingly. For example, reported entries of Nipponese and Japanese American were classified as Japanese; entries of Taiwanese and Cantonese as Chinese, etc.

The category "Other" includes Asian and Pacific Islander groups not identified separately (e.g., Cambodian, Indochinese, Pakistani, Indonesian, Fiji Islander) and other races not included in the specific categories listed on the questionnaire. (Asian and Pacific Islander groups in the "other" category in 100-percent tabulations are included in the category "Asian and Pacific Islander" in sample tabulations.)

Spanish origin. As noted above, counts of the population by Spanish origin in this report are provisional. Final counts for Spanish origin will be determined after the sample data have been processed. The sample counts will first appear in the PC80-1-C reports.

Persons of Spanish origin or descent are those who classified themselves in one of the specific Spanish origin categories listed on the questionnaire—Mexican, Puerto Rican, or Cuban—as well as those who indicated that they were of other Spanish/Hispanic origin. Persons reporting "other Spanish/Hispanic" origin are those whose origins are from Spain or the Spanish-speaking countries of Central or South America, or they are Spanish origin persons identifying themselves generally as Spanish, Spanish American, Hispano, Latino, etc. Origin or descent can be viewed as the ancestry, nationality group, lineage, or country in which the person or person's parents or ancestors were born before their arrival in the United States. Persons of Spanish origin may be of any race.

Excerpts From "Factors Influencing 1980 Census Totals for Racial and Spanish-Origin Groups"[1]

The count for the Hispanic population was 14,605,883, an increase of 61 percent over the 9.1 million reported in 1970. Based on preliminary evaluations, this larger count appears to result from factors aside from the natural increase of the resident population: Improvements in the 1980 census, better coverage of the population, improved question design, and an effective public relations campaign by national and community ethnic groups. These efforts undoubtedly resulted in the inclusion of a sizeable but unknown number of persons of Hispanic origin who are in the country in other than legal status.

The reports from the 1980 census show a significant change in the way the Hispanic population is reported. This change has had the most effect upon the counts for the "White" and "other" population groups. The race concept used by the Bureau in 1980 was based upon self-identification: persons were asked to report the race with which they identify.

Nationwide, 40 percent of Spanish-origin persons did not report a specific race, but reported in the "other" category; about 56 percent reported "White." In 1970, persons who marked "other" and provided write-in entries such as Puerto Rican, Mexican, etc., were classified as "White." Thus, in 1970, only 1.0 percent of the Spanish-origin persons were classified as "other" and 93 percent as "White" in the census reports.

Because of the changes, noted above, the 1980 population totals for "White" and "other" are not comparable to 1970 census figures. The 1980 count of the White population is 188,340,790. Of the 6,756,986 persons reported in the "other" category in 1980, about 5,840,648 are Spanish-origin persons. Most of the remaining 916,338 were also classified as White or as Black or another specified race in 1970.

1/ "1980 Census Population Totals for Racial and Spanish-Origin Groups in U.S. Announced by Census Bureau," Commerce News, February 23, 1981, #CB81-32.

Feedback F: Irene found that the information from the Bureau of the Census helped to clarify why the totals of the racial groupings and the total of persons of Spanish origin equaled 124 percent of the total population. Her experience in Texas suggested that most persons of Spanish origin were not Black, yet she recalled from her vacations in Florida that some groups, such as Jamaicans, could be both Black and of Spanish origin. A further contact with the office of city planning revealed that another census report showed the race for persons of Spanish origin for the city, although not for precincts. Since this report indicated that the number of Black persons of Spanish-origin in Abbeyville was very small, she decided that it would be all right to ignore the overlap between the Black and Spanish-origin categories. On the other hand, many persons of Spanish origin were also classified as White, so White was not the same as Anglo. Irene decided that she would use the category "Anglo and Other" to refer to the remainder of the population after she subtracted out Blacks and persons of Spanish origin for each election precinct. She posted the appropriate information on table 3.

Instruction G: "Once you have collected all the necessary data," Brad went on, "you might begin to think about possible solutions to the problem. It is probably apparent to you that there is an infinite number of possibilities for dividing up the city into wards. However, the city council has indicated a preference for the same number of council members as at present, if possible, with the mayor still to be elected at large; so, I think you should begin by developing a plan that has 4 wards to see if it is feasible."

Your group should now begin work on a preliminary plan for a 4-ward system. Keep in mind the constraints and assumptions that you have identified for the problem. You have been provided with population data (table 3) and election precinct maps (map 1). In addition, you have learned that the four council members live in precincts 12, 15, 23, and 31; the mayor lives in 34.

Homework Assignment 1: *Using the data provided and the base maps you have been given, prepare maps showing the distribution of the Black and Chicano population in Abbeyville for 1970. You may wish to transfer this information to the election precinct maps also so that you can determine the approximate ethnic composition of each precinct. When you have completed your population maps, you should use the data provided to develop a provisional 4-ward plan. This plan should be brought to the next class meeting so that it can be used by the group for its work. You will be expected to hand in your maps and plan at the end of the next class session. This homework assignment will count __ percent of the grade for this exercise.*

TABLE 3

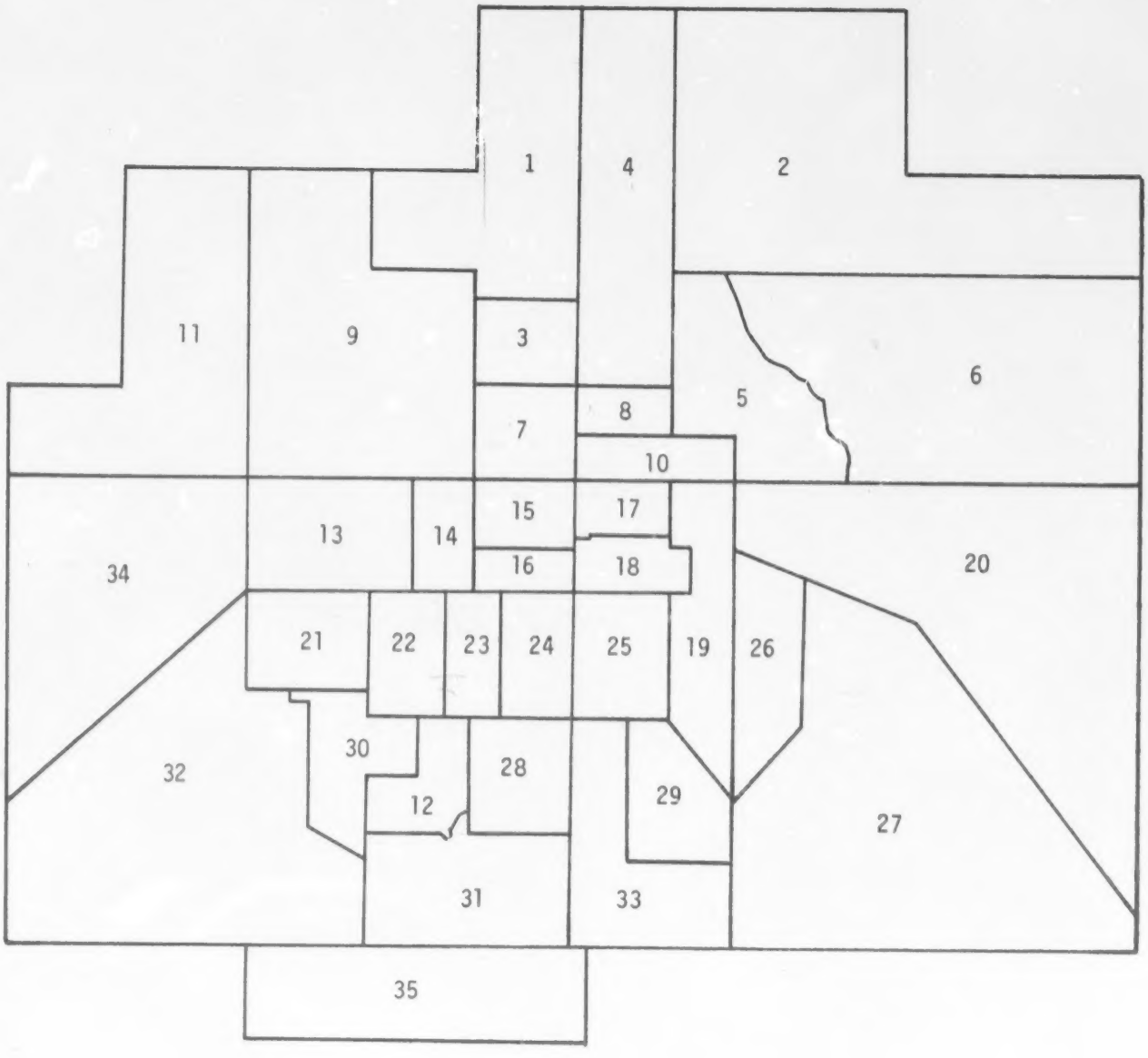
Population by Race and Ethnicity for Abbeyville, Texas, Precincts: 1970 & 1980

Precinct Number	1970 Total	1970 Spanish Language N=	1970 Spanish Language %	1970 Black N=	1970 Black %	1970 Anglo and Other 1/ N=	1970 Anglo and Other 1/ %	1980 Total	1980 Spanish Origin N=	1980 Spanish Origin %	1980 Black N=	1980 Black %	1980 Anglo and Other 1/ N=	1980 Anglo and Other 1/ %
1	4,534	2,574	57	25	1	1,935	43	4,480	3,387	75	86	2	1,007	23
2	3,945	1,130	29	201	5	2,614	66	4,356	1,925	40	438	9	2,493	51
3	6,821	3,981	58	28	0	2,812	41	6,636	4,118	62	139	2	2,379	36
4	5,259	2,642	50	29	1	2,588	49	4,735	3,225	68	411	9	1,099	23
5	4,474	2,646	59	622	14	1,206	26	1,721	1,079	63	403	23	239	14
6	9,947	3,060	31	5,051	51	1,836	18	7,092	2,406	34	4,139	58	538	8
7	6,418	69	1	27	0	6,322	98	5,313	216	4	117	2	4,980	94
8	4,348	522	12	22	1	3,804	87	5,150	1,006	20	531	10	3,613	70
9	4,057	129	3	21	1	3,907	96	6,568	476	7	178	3	5,914	90
10	3,392	487	14	108	3	2,797	82	3,523	630	18	233	7	2,660	76
11	4,424	37	1	6	0	4,381	99	5,009	284	6	105	2	4,620	92
12	4,941	106	2	2	0	4,833	97	2,973	71	3	11	0	2,896	97
13	4,778	98	2	15	0	4,665	97	4,496	250	6	81	2	4,165	92
14	3,381	23	1	1	0	3,357	99	2,86.	230	8	34	1	2,598	91
15	2,763	66	2	9	0	2,724	97	2,096	60	3	12	0	2,024	97
16	2,405	57	2	8	0	2,340	97	2,402	191	9	13	0	2,198	92
17	2,710	113	4	6	0	2,591	95	2,624	348	13	52	2	2,224	85
18	2,262	99	4	5	0	2,158	95	2,098	211	10	90	5	1,797	85
19	6,745	1,615	24	13	0	5,117	75	6,957	2,943	42	325	5	3,689	53
20	4,596	0	0	4,542	99	54	1	3,355	413	12	2,909	87	33	0
21	5,537	222	4	0	0	5,315	95	4,539	470	10	33	1	4,036	89
22	4,475	90	2	9	0	4,376	97	3,754	209	6	39	1	3,506	93
23	2,508	75	3	5	0	2,428	96	2,127	46	2	16	1	2,065	97
24	4,573	206	4	8	0	4,359	95	3,929	331	8	73	2	3,525	90
25	4,637	194	4	0	0	4,443	96	3,905	532	14	74	2	3,299	84
26	4,388	1,089	25	13	0	3,286	74	6,393	3,500	55	168	3	2,725	42
27	2,672	1,037	39	113	4	1,522	56	3,510	1,159	33	2,183	62	168	5
28	4,525	73	2	1	0	4,451	98	4,059	133	3	47	1	3,879	96
29	4,797	110	2	4	0	4,683	97	4,474	405	9	140	3	3,929	88
30	2,446	50	2	0	0	2,396	97	5,255	257	5	72	1	4,926	94
31	3,000	57	2	1	0	2,942	98	5,733	165	3	101	2	5,457	95
32	4,576	201	4	7	0	4,368	95	5,366	299	6	120	2	4,947	92
33	4,074	94	2	3	0	3,977	97	4,721	304	6	90	2	4,327	92
34	3,406	64	2	6	0	3,336	97	7,830	501	6	141	2	7,188	92
35	1,225	57	5	1	0	1,167	95	6,782	343	5	103	2	6,336	93
Totals	149,055	23,073	15	10,912	7	115,080	77	157,318	32,123	20	13,706	9	111,489	71

1/ The remainder of the ponulation after subtracting Spanish origin (or language) and Black is understated somewhat because there is actually some overlap between the two categories.

MAP 1

Precinct Map for Abbeyville, Texas



Session 8

Feedback G: Following a couple of days of work, Irene was ready to present her preliminary plan to Brad (map 2 and table 4). She had divided the city into 4 wards that were somewhat the same in population, thus preserving the concept of equal voting weight, and most of the minority members, Blacks and persons of Spanish origin, were located in the same ward. Irene was convinced that her plan was the most reasonable one that could be devised for 4 wards.

"I'm pleased with your plan, Irene," Brad told her in his office. "You have certainly managed to create a 'minority ward,' and you achieved a better balance of population size among the wards than I thought would be possible using election precinct boundaries. However, before we present this plan to the city council, we should subject it to critical analysis."

Instruction H: "What I mean by that," Brad explained, "is that we don't know yet if there are any problems with this plan and we have not determined if some other plan, perhaps using a different number of wards or different boundaries, might be more satisfactory. Let's look your plan over now and see how well it fulfills the conditions that have been set out for it."

You should review the plan of your group, analyzing the extent to which it meets the goals and constraints set forth by your group. Prepare an itemized list of the advantages and deficiencies of your plan. In addition, evaluate the advantages and disadvantages of Irene's 4-ward plan.

MAP 2

Irene's 4-Ward Plan

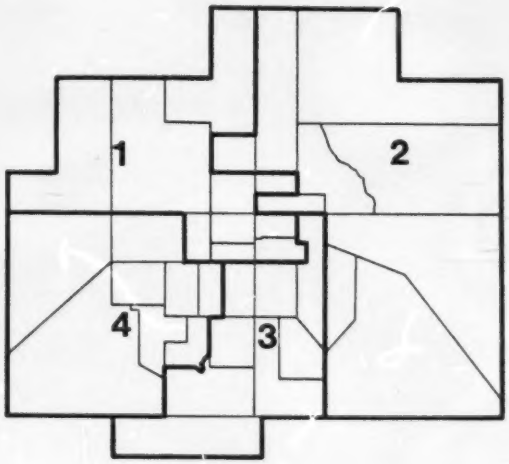


TABLE 4

Irene's 4-Ward Plan

Ward	Precincts	Total	Spanish Origin		Black		Anglo and Other	
			N=	Percent	N=	Percent	N=	Percent
1	1, 7-9, 11, 14-18	38,602	6,409	16.6	1,218	3.2	30,975	80.2
2	2-6, 10, 20, 26-27	41,811	18,455	44.1	11,022	26.4	12,334	29.5
3	19, 24-25, 28-29,31,33,35	40,560	5,156	12.7	953	2.3	34,451	84.9
4	12-13, 21-23, 30,32,34	36,345	2,103	5.8	513	1.4	33,729	92.8

Session 9

Feedback H: Irene and Brad reviewed her plan and wrote up the following list of strong and weak points about it.

Advantages:

1. The plan has 4 wards, thus complying with the preferences of city council members.

2. The 4-ward plan follows existing election precinct boundaries and has no noncontiguous areas included in any ward.

3. A large percentage of both the Black population (80 percent) and persons of Spanish origin (57 percent) are located in one ward where their combined numbers are a clear majority of the population.

4. Incumbent council members reside in three of the four wards giving the least concentration that is likely to be possible.

Disadvantages:

1. The "minority ward," ward 2, is more evenly divided among Anglos, Blacks, and persons of Spanish origin. That breakdown means that it will be difficult to elect a council member who is in the same group as the majority of the residents of the area, and it sets the stage for potential conflict among the various groups in the ward.

2. Nearly 43 percent of the Spanish-origin population is scattered over the three 'Anglo' wards. This is a rather large proportion of the Spanish origin population to ignore, and it seems likely that the courts may not be willing to accept the placement of such large numbers of persons of Spanish origin in wards that are mostly Anglo.

3. While the distribution of incumbent council members is about as good as could be arranged under a 4-ward plan of the five incumbents, three (including the mayor) live in the same ward and may be forced to run against each other or retire voluntarily.

4. All 4 wards are only relatively close to the same size having a deviation of approximately 12 percent from largest to smallest, based on the census ((41,811-36,345) ÷ 36,345 x 100). A much smaller percentage would be preferable.

Instruction I: "From the analysis above, it seems clear to me that the 4-ward plan, even as well thought out as you have made it, is not the best possible solution to the problem of establishing a ward system in our city," said Brad. "I will arrange a meeting with the city council to present your plan and our analysis sometime this week. Meanwhile, in anticipation of the council's probable agreement that a 4-ward plan is unsatisfactory, you should begin work on a more suitable plan."

Your group should now begin work on a final plan for reapportioning city council elections in Abbeyville. You will need to establish the optimum number of wards and the ward boundaries. Keep track of your deliberations and be prepared to defend your decisions later when you make your report. You will have 1 week from today to prepare a plan and justify it. You will be expected to select a representative or representatives from your group to present the final plan to the class. In addition, you will be expected to turn in to the instructor a written proposal for the establishment of a ward system in Abbeyville. The written proposal should include appropriate maps and tables and should also contain a detailed analysis of the proposed ward system, including justifications for the selection of the number of wards, boundaries, advantages, disadvantages, probable impact on the voting patterns of the community, etc. You may use information from the 1970 and 1980 censuses to investigate patterns of population growth and decline (table 3), information regarding the location of incumbents, and information from the city on the number of registered voters by precinct (table 5).

Your feedback to this instruction will be in the form of responses from other class members to your oral reports and the graded group report that will be returned by the instructor. The group report will comprise __ percent of the grade for this exercise.

TABLE 5

City of Abbeyville Registered Voters By Precinct, May 1, 1981

Precinct	N=	Precinct	N=	Precinct	N=
1	1,228	13	1,702	25	1,527
2	903	14	1,261	26	802
3	1,579	15	1,455	27	394
4	899	16	1,108	28	2,206
5	410	17	892	29	1,630
6	2,589	18	1,019	30	1,945
7	1,350	19	1,579	31	3,201
8	1,003	20	1,029	32	2,741
9	2,493	21	1,689	33	2,056
10	1,120	22	1,997	34	2,426
11	2,378	23	1,326	35	886
12	2,431	24	1,634	Total	55,887

Session 10

Feedback I: Irene worked out a second plan (table 7 and map 3) following Brad's instructions. Brad approved the plan, and it was submitted to the city council, which, after much deliberation, decided that Irene's plan would be submitted to the courts in the event that the city lost the court case.

Instruction J: *Determine which one of the plans that you have either examined or developed appears to be the most acceptable to the courts (table 7). Be prepared to defend your evaluation of these plans in class.*

MAP 3

Irene's 7-Ward Plan

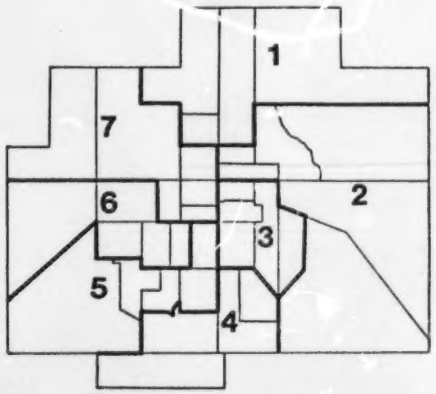


TABLE 6

Irene's 7-Ward Plan

Ward	Precincts	Total	Spanish Origin		Black		Anglo and Other	
			N=	Percent	N=	Percent	N=	Percent
1	1-4	20,707	12,655	61.1	1,074	5.1	6,978	33.6
2	5-6, 8, 10, 20, 27	24,341	6,693	27.5	10,397	42.7	7,251	29.8
3	17-19, 25-26,	21,977	7,534	34.3	709	3.2	13,734	62.5
4	29, 31, 33, 35	21,710	1,217	5.6	398	1.8	20,095	92.6
5	12, 24, 28, 30, 32	21,587	1,091	5.0	323	1.5	20,173	93.5
6	13, 21-23, 34	22,746	1,476	6.5	310	1.4	20,960	92.1
7	7, 9, 11, 14-16	24,250	1,457	6.0	459	1.9	22,334	92.1

TABLE 7

Evaluation of the Various Ward Plans Considered in this Exercise

Questions	Irene's Plans		Your Plans	
	1	2	1	2
1. How many wards does the plan include?				
2. Does the plan follow existing election precinct boundaries?				
3. Does the plan include any noncontiguous areas?				
4. What is the percent deviation between the smallest and the largest areas?				
5. Is the Spanish-origin population located in one or more wards where its combined numbers are a clear majority of the population?				
6. Is the Black population located in one or more wards where its combined numbers are a clear majority of the population?				
7. How many wards have more than one incumbent council member?				
8. How many of the wards contain nearly evenly divided numbers of Anglos, Blacks, and persons of Spanish origin that may set the stage for potential conflict among the various groups in the ward?				
9. What percentage of the Spanish-origin population is scattered over the wards where they are not the majority group?				
10. What percentage of the Black population is scattered over the wards where they are not the majority group?				
11. Overall, what is your evaluation of how well the plan met its objective (p.65) (1 = unacceptable: 10 = acceptable)?				

6.1

Identifying the Market: The Use of Surrogates

Market segmentation strategies require careful identification of target populations. Several recent studies indicate that developing word pictures can be helpful in summarizing the characteristics of each relevant population. This exercise starts with one such picture (e.g., a portrait of do-it-yourselfers) and then identifies assumptions and related population characteristics to be used in locating a large clustering of individuals with similar characteristics.

PROBLEM: Carlson General Supply, which started as a general purpose hardware store, has modified its marketing strategy to the point that it currently specializes in building materials and related supplies for the do-it-yourselfer. The Carlson family's interpretation of the economic forecasts has led them to believe that the time is right for establishing a new store. The primary reason is that the high long-term interest rates in the housing industry have forced many homeowners to remodel and build onto their present homes rather than to move up to a bigger or nicer home.

1. What statements can you develop that adequately characterize people who are inclined to undertake their own home repairs and redecorating projects? List at least five relevant assumptions in column 1 of worksheet 1. Next, think about their housing. List at least five pertinent assumptions in the lower portion of column 1. Try to limit your resources to a few words.

2. Review your list to determine whether the assumptions duplicate one another. Revise or eliminate them as needed.

3. Select an appropriate geographic level for analysis. If you want to locate the store within a metropolitan area, use census tract data for the remainder of this exercise. Several other options (e.g., counties, places) are available if you decide that the new store should be located in nonmetropolitan areas of the State. If any one of the latter options is chosen, you will need to obtain copies of the population and housing characteristics reports for your State. Figure 1 will help you determine the volumes to use for either 1970 or 1980.

4. Search through the selected volume(s) to locate surrogate (substitute) measures for each of the assumptions. If one of your assumptions is "large houses will require a greater quantity of do-it-yourself supplies than a small house," you should not expect to locate data on square footage of houses occupied by 'do-it-yourselfer' types." There are, however, several other options that need to be considered (figure 2). The final selection generally requires careful evaluation, creativity, and compromise (e.g., the surrogates may not match the assumptions as neatly as you prefer they do).

5. Once a reasonable set of options has been identified, fine-tune your choices by considering the type of statistic that you desire. Suppose your interest is in the identification of "individuals who can afford to renovate or add on to an existing structure" (figure 3):

a. Is it better to consider income alone or in relationship to the average monthly owner costs (e.g., mortgage payments, utility costs) as demonstrated in figure 3 (HC80-2; table H-13)? Why or why not?

b. For household income you have a choice between a median and a mean. Which would you choose and why?

c. Would you prefer to construct a special measure (e.g., number of households with incomes greater than $20,000, number of owners with incomes greater than $20,000 whose selected monthly owner costs are less than 25 percent of their income) rather than use the ones listed in the tables?

d. Would there be any advantages to the use of an aggregate income figure (e.g., aggregate household income=mean income x number of households)?

e. Is it better to use whole numbers (e.g., there are 2,494 households with incomes greater than $20,000) or percentages (e.g., 78 percent of the households have incomes greater than $20,000) as surrogates in your problem? Why or why not?

FIGURE 1

Names of Selected Census Publications

Geographic Level	Name	1980	1970
Census Tract	Census Tracts	PHC80-2	1970 PHC(1)
County or place in metropoliton areas	Characteristics of the Population	PC80-1	1970 PC(1)
	Characteristics of Housing Units	HC80-1	1970 HC(1)

FIGURE 2

Advantages and Disadvantages of Using Selected Surrogates

Assumption	Option		Evaluation	
	Surrogate	Source	Advantages	Disadvantages
Large houses will require a greater quantity of do-it-yourself supplies than small houses	Units in structure	PHC80-2 H-7	Six lines of data are given	"Units in structure" refers to the number of units under one room, not to the number of rooms in the unit; also, the data are based upon a sample of the housing units
	Median value of owner-occupied housing	H-1	In general, larger houses cost more; also, the data are from the complete count	The value of the housing is determined by the person who filled out the questionnaire, and it may not reflect the sales trends in the area; also, a higher "value" is being placed on the amenities of the housing rather than its size because of the rising energy costs
	Median number of rooms, all year-round units	H-1	In general, larger houses have more rooms, although the size of the rooms may vary; also, the data are complete count	The universe in this case is all year-round units; thus, it includes both renter- and owner-occupied units, as well as vacant units
	Number of units with 5 or more rooms	H-1	Units with fewer than 5 rooms may be apartments or otherwise may be too small for good do-it-yourself projects	It includes renter-occupied and vacant units
	Median number of rooms, owner-occupied units	H-1	Homeowners are more likely to become involved in do-it-yourself projects than renters; and there are usually significant differences between number of rooms and renter-occupied units	It is not the same thing as square footage or other direct measures of size

6. Reexamine your assumptions in light of the surrogate you selected. Do the assumptions need to be refined? For instance, are do-it-yourselfers really those with high incomes or are they individuals with low and moderate incomes who find that they cannot afford to hire a contractor for needed repairs or remodeling?

More specifically, aren't low and moderate income homeowners who have a small portion of their incomes earmarked for housing costs more likely to be able to make these do-it-yourself purchases than homeowners whose housing costs are more? In this instance, table H-13 offers a useful set of cross-tabulations. In most cases, however, you will need to reorganize the data creatively to suit your own needs. (Note: more detailed cross-tabulations are frequently available on the census summary tape files then in printed reports.)

7. Prepare a written justification to accompany worksheet 1. In this justification, pay particular attention to the thought processes that you used to select, modify, or discard individual items on your list. You may find that it is useful to construct a worksheet similar to figure 2 to facilitate the organization of your ideas.

FIGURE 3

Selected Surrogate Options From the 1980 Census Tract Reports

Assumption	Surrogate	
	Table P-11 Income Characteristics in 1979: 1980	Table H-13 Financial Characteristics of Housing Units: 1980
Do-it-yourselfers are generally individuals who can afford to renovate or add onto an existing structure	INCOME IN 1979 All households Less than $5,000 $5,000 to $7,499 $7,500 to $9,999 $10,000 to $14,999 $15,000 to $19,999 $20,000 to $24,999 $25,000 to $34,999 $35,000 to $49,999 $50,000 or more Median income Mean income Owner-occupied households Median income Mean income Renter-occupied households Median income Mean income All families Median income Mean income All unrelated individuals, 15 years and over. Median income Mean income Per capita income	Specified owner occupied[1] SELECTED MONTHLY OWNER COSTS[2] Less than $100 $100 to $149 $150 to $199 $200 to $249 $250 to $299 $300 to $349 $350 to $399 $400 to $499 $500 or more Median.....dollars Units with a mortgage Median.....dollars Units not mortgaged Median.....dollars SELECTED MONTHLY OWNER COSTS AS A PERCENTAGE OF INCOME BY INCOME Less than $6,000 Less than 20 percent 20 to 34 percent 35 percent or more Not occupied Median $6,000 to $9,999 Less than 20 percent 20 to 24 percent 25 to 34 percent 35 percent or more Not occupied Median $10,000 to $14,999 Less than 20 percent 20 to 24 percent 25 to 34 percent 35 percent or more Not occupied Median $15,000 to $19,999 Less than 20 percent 20 to 24 percent 25 percent or more Median $20,000 or more Less than 20 percent 20 to 24 percent 25 percent or more Median

[1] Limited to one-family homes on less than 10 acres and no business on property.

[2] Sum of payments for real estate taxes, property insurance, utilities, fuels, water, and mortgage.

Source: PHC80-2.

SUGGESTIONS FOR FURTHER WORK:

This exercise has assisted you in identifying a set of measures that can be used to target populations on the basis of service assumptions regarding who becomes involved in do-it-yourself projects. A recent article on "Marketing Newspapers with Lifestyle Research" reported that 12 (adult markets) groups were identified on the basis of an extensive battery of questions on activities, attitudes, and social values. The data were then cross-tabulated with demographic characteristics and behavior patterns so that statistical and behavioral pictures of each group and of the total market could be seen. Develop appropriate surrogate measures for each of the following groups that this article identified (figure 4). Record your responses on a photocopy of worksheet 1.

FIGURE 4

Selected Lifestyles in the Palm Beach County, Florida, Adult Market

Lifestyle	Assumptions
Mr. Middles	Middle aged; middle income; middle educated
Tomorrow's Leaders	Successful, educated professionals and business managers, and men in high skill trade and service jobs; successful young Black males
Midlife Optimists	Mothers enjoying the years after raising their children; median age of 47
Ms. Restless	Single divorcees maintaining single-parent households; mothers of preschool and school children
Domestic Inactives	Lower income, poorly educated female segment with low participation in leisure activities

Source: American Demographics, January 1981.

WORKSHEET 1

Assumptions and Surrogate Measures Used to Identify Do-it-yourselfers

Assumption	Surrogate	Census Publication	
		Year	Table No.
Do-it-yourselfers are generally individuals who: 1. 2. 3. 4. 5.			
Do-it-yourselfers are more likely to need building supplies if they live in housing that: 1. 2. 3. 4. 5.			

Trading Areas: Assumptions and Reality

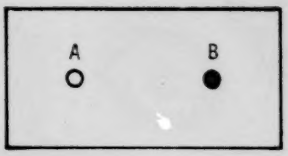
Every store has a trading area--the geographic region from which the store draws its potential customers. It can vary in size from a number of blocks for a small neighborhood store to a radius of several miles for a store located in a large shopping center. Although the trading area is a useful concept, there is no universally accepted formula for determining its size and shape. This exercise poses three questions: Are the size and shape of the trading area affected by the assumptions that are used? What map reading skills are needed to combine information on the characteristics of the retail center under study with data on those of the population who live in the trading area? What are the advantages and disadvantages regarding the use of various trading area concepts?

Activity 1

PROBLEM:

1. The trading area concept is only as good as the assumptions that accompany its use. Figure 1 represents a hypothetical area that contains two retail centers (A and B). On the figures that follow, the trading areas are illustrated by the shaded portions in each figure. They represent the major sources of customers. A scale of distance is not included because the assumptions are appropriate whether we are talking about the trading area for a small neighborhood grocery store or one for a large regional shopping center.

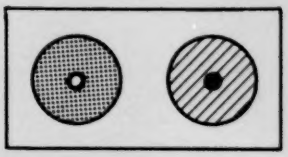
FIGURE 1



Use the following questions as an aid in understanding the assumptions that underlie each illustration (figures 3 to 8). Answers for figure 2 are provided.

- What decisions are being made by people when they choose a trading area?
- Which areas are being served? Why?
- Which areas are not being served? Why?

FIGURE 2



Assumptions relevant to figure 2:

- Trade for the retail center will come only from people living within a certain distance of it
- Areas that are within ___ miles of the center are included in the trading area
- A substantial area is not served by either center or is served so insufficiently as not to be a major factor in the size and shape of the trading area
- The two centers have equal drawing power

FIGURE 3

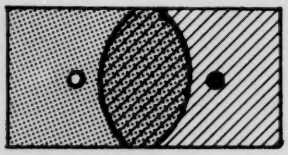


FIGURE 4

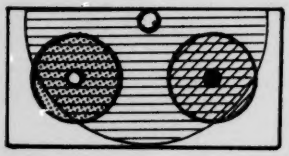


FIGURE 5

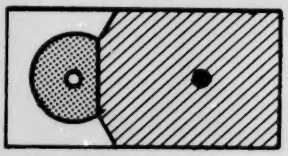


FIGURE 6

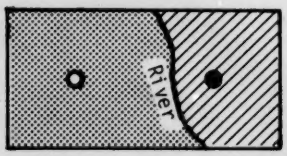


FIGURE 7

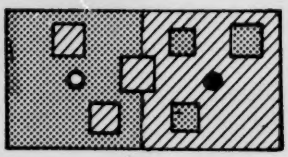
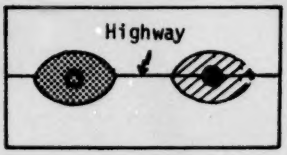


FIGURE 8



2. To market effectively to the inhabitants of the trading area, it is helpful to determine their characteristics--high income, mobile, young, ethnically oriented, etc. Since census data are the primary source of these characteristics for small areas, it is necessary to interrelate the trading area as defined with areas for which census data are available. One can usually match the trading area quite precisely with census data by city block; but, since the range of population characteristics available at this level is limited (e.g., no income data), it is frequently desirable to approximate the trading area using larger units of analysis such as census tracts, block groups, or enumeration districts. Figure 9 indicates that a retail center (in this case, a large shopping center) is located along a major traffic artery of the city. Within this same area, there are 50 small areas (census tracts) for which population information is available (figure 10). Because the retail center's management wants to know how many people live in the trading area, they have decided to merge the information that is presented in figures 9 and 10.

a. Determine for figures 11-13 what methodology was probably used to decide which census tracts to include in the trading area.

FIGURE 9

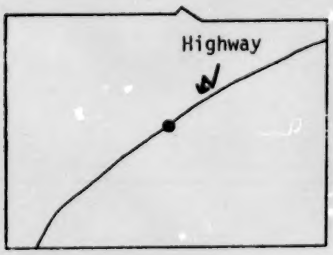


FIGURE 10

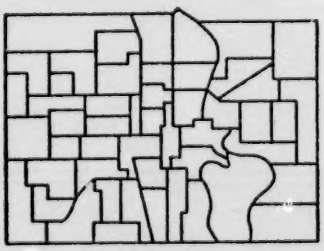


FIGURE 11

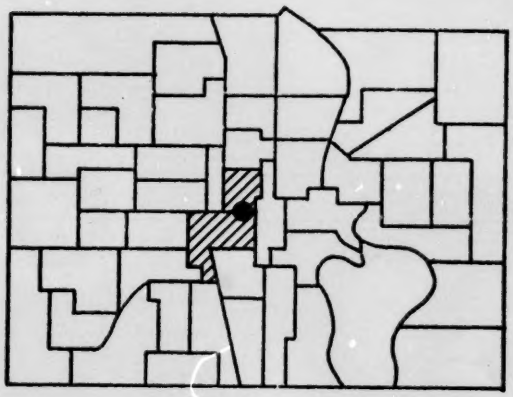


FIGURE 12

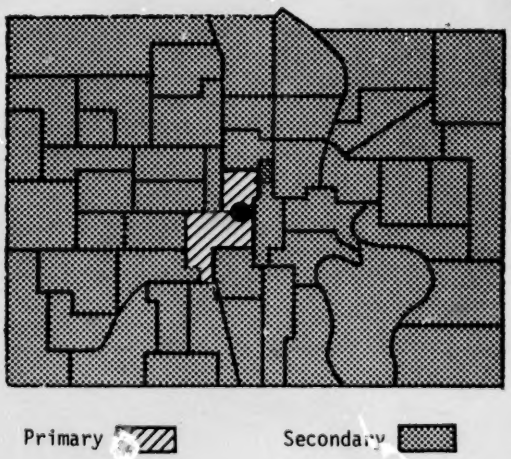
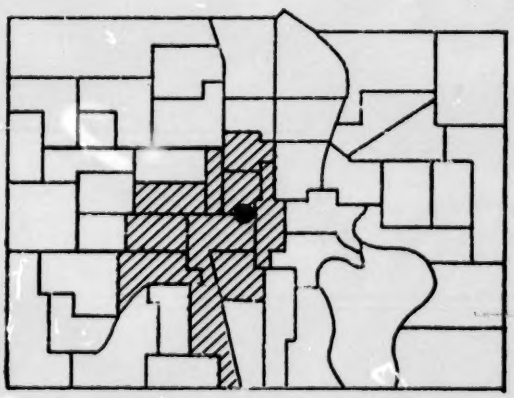


FIGURE 13



b. Based upon a market survey, management decided that most of the population lived within an elliptically shaped area whose boundary was strongly influenced by accessibility to the retail center. However, they found that it was difficult to determine which census tracts to include in the area because the tract boundaries did not coincide with the trading area's boundary. For each of the following figures (14-16) describe the methodology that they used to determine the total population of the area.

FIGURE 14

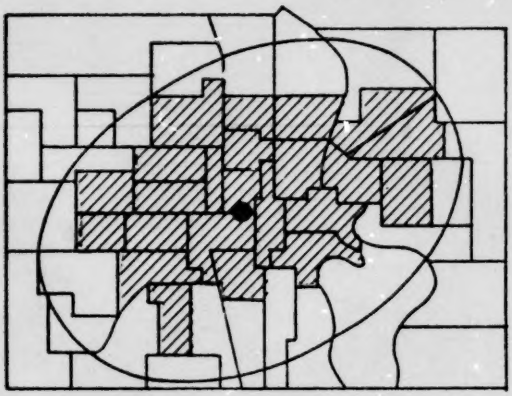


FIGURE 15

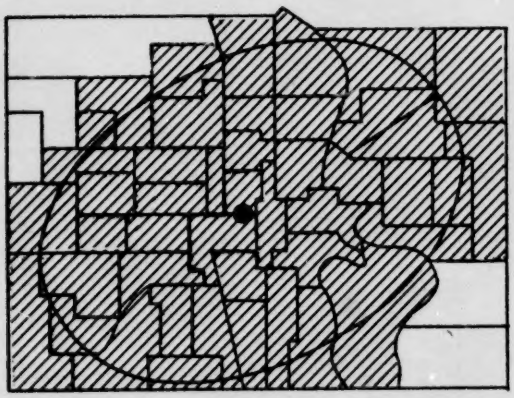
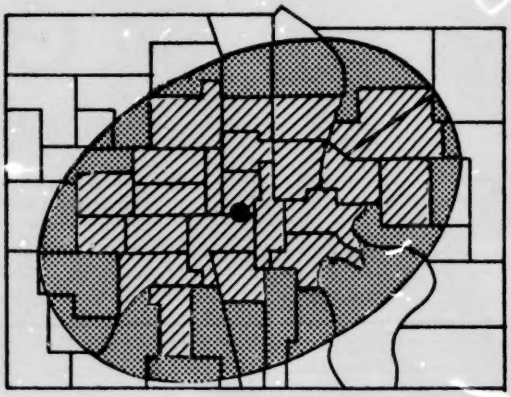


FIGURE 16



Estimated by interpolation

As you now understand, the definition of a trading area requires careful consideration of the assumptions that underlie its use. The maps (figures 2-16) that you have studied were rather simple. In the real world, they are generally more complicated. Before you can delineate a trading area, therefore, you must learn how to use the principal map resources that are employed by those making marketing decisions so that you will be able to locate and understand the characteristics of the retail center and of its trading area.

Activity 2

Business problems frequently require a geographic reference. Where should the new store be located? What sales goals should be established for the stores in the SMSA? What is a reasonable territory for sales representatives? What is the market area for this shopping center? This section introduces the types of maps that appear in two popular census publications; one type appears in the census tract publications series (decennial), and the other is in the major retail center series (economic). Both are highlighted here because they are available for SMSA's and contain geographic reference information that is valuable in resolving business problems.

PROBLEM:

1. Census tracts are small, relatively permanent areas into which metropolitan areas have been divided to show small-area statistics. Use the 1970 census tract map for Reno, Nevada, as shown in figures 18 and 19 to answer the following questions.

a. Symbols are used to indicate the boundaries of census tracts. Referring to the symbols in figure 17, can a census tract cross a county, State, or a municipal (corporate) boundary?

FIGURE 17

Boundary Symbols for Census Tracts

Census Tract Boundaries:

_____ State

_____ County

_____ Corporate Limit

_____ Other Tracts

Boundaries Which Are Not Tracts:

---------- Corporate Limit

Source: 1970 PHC(1).

b. The central city of Reno has a most unusual boundary. In how many places is the municipal boundary used as a tract boundary?

c. How many census tracts are completely within the Reno municipal boundary?

d. Whenever a municipal boundary cuts through a census tract, it is called a "split" tract. List the split tract numbers for Reno.

e. The census tract committees that delineate the tract boundaries attempt to use boundaries that are easy to recognize. Most frequently these boundaries follow streets; however, other physical or political features are used to form boundaries. List at least two tracts that are separated by each of the following:

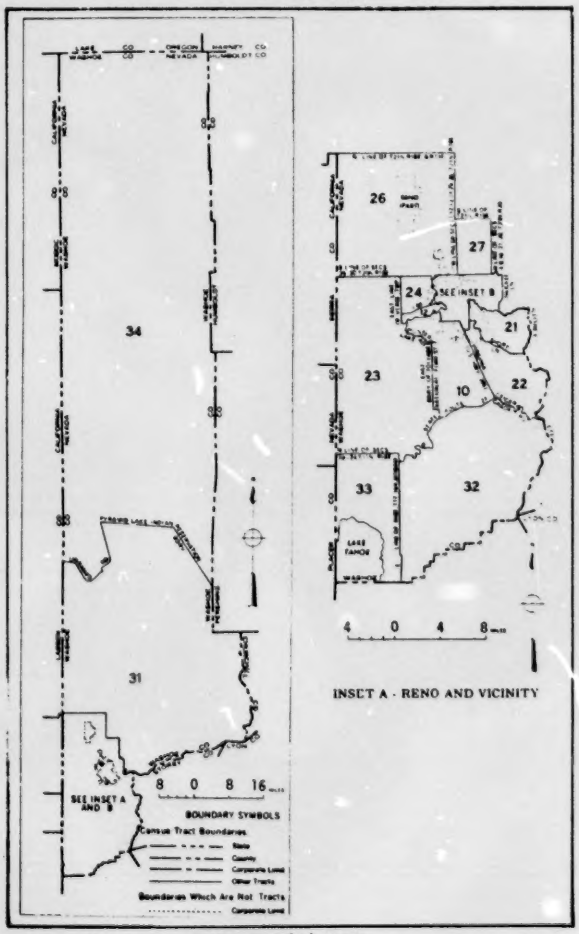
- a creek
- a river
- a railroad
- an interstate highway
- a municipal boundary
- other (please specify)

f. On the average, census tracts contain 4,000 inhabitants. To reach this goal, the geographic size of the census tracts must vary.

Three maps with different scales are used to show the tract boundaries of the Reno SMSA in 1970. Using the scales that are included at the bottom of each tract map inset, estimate the size (in square miles) of tracts 34 and 26 (figure 18) and tract 2 (figure 19).

FIGURE 18

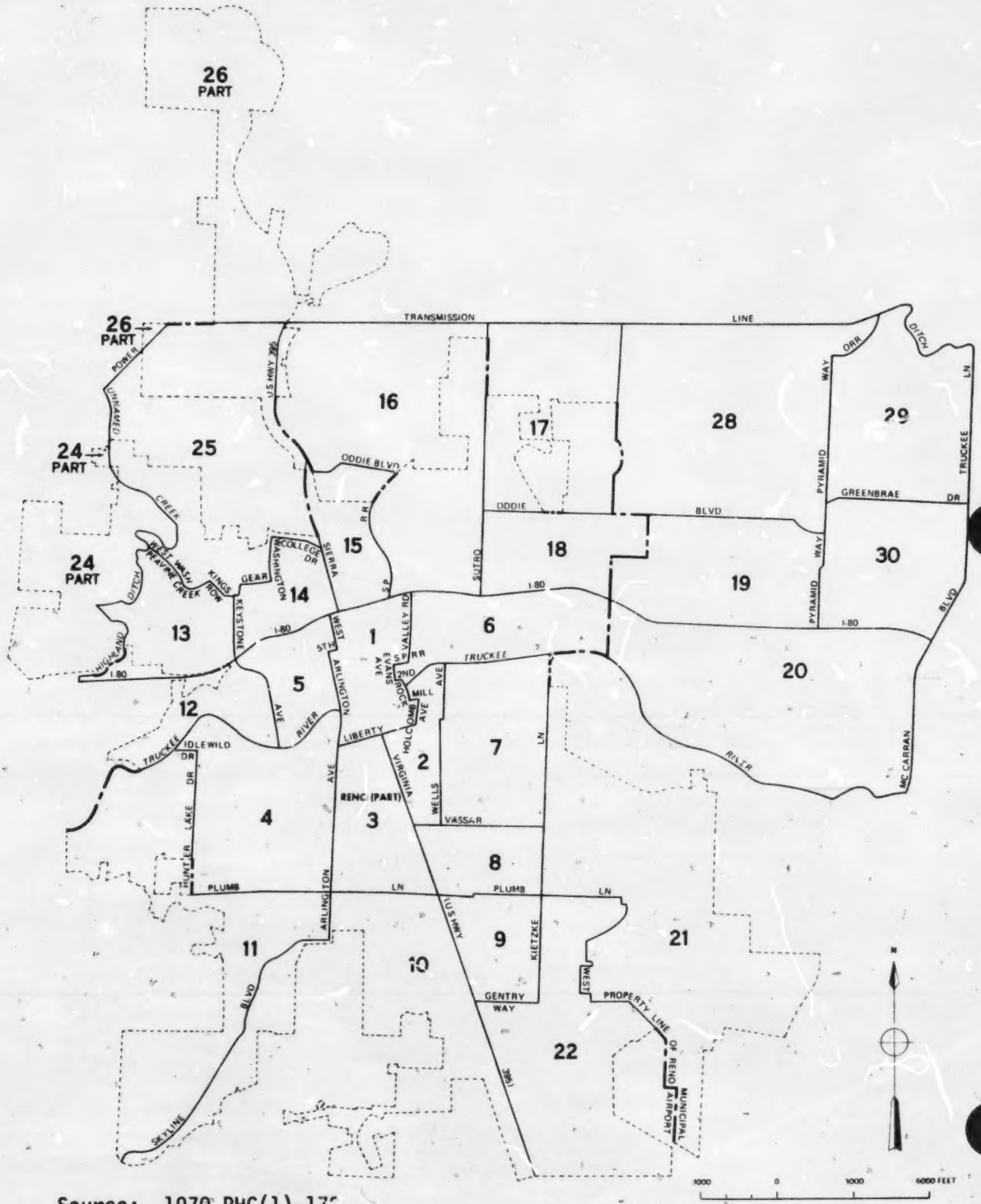
Census Tract Outline Maps for the Urban Fringe of Reno, Nevada, SMSA: 1970



Source: 1970 PHC(1)-172.

FIGURE 19

Census Tracts for Central City and Environs (Inset B)
of the Reno, Nevada, SMSA: 1970



Source: 1970 PHC(1)-172.

FIGURE 20

Major Retail Centers in the Reno, Nevada, SMSA: 1977

Redrawn from RC77-C-29

2. A "major retail center" (MRC) is a concentration of at least 25 retail stores that is located inside an SMSA but outside the central business district (CBD). At least one of the 25 stores must be a general merchandise store with a minimum of 100,000 square feet of total under-roof floor space. Use the Reno major retail center (MRC) map, figure 20, that was developed as a part of the 1977 census of retail trade to answer the following questions.

a. What is the name of the outlined area? The RC77 maps are shaded gray.

b. How many major retail centers are there in Reno? How are they designated on the map?

c. What is the main purpose of this map: to show the general location of the MRC's or to show the exact property lines of each center?

d. As defined by the Bureau of the Census, the "central business district" (CBD) is the downtown retail area of the SMSA central city or of other cities of 50,000 or more persons. It is an area of very high land valuation, high concentration of retail business, offices, theaters, hotels, and "service" businesses; and high traffic flow. A CBD is delineated by existing census tract boundaries and consists of one or more entire census tracts. Use the map to provide evidence that the CBD is located in the historic center of Reno (HINT: use the street patterns and names).

e. Besides locating the central city boundary, the CBD, and the MRC's, MRC maps show the location of major traffic arteries. Why is it crucial to present this information on these maps?

f. If one planned to travel on Wells Avenue and Oddie Boulevard to get from MRC 1 to MRC 2, what is the distance in miles?

3. Use both the outline tract and MRC maps to complete the following tasks.

a. Transfer the information on the location of major traffic arteries from the MRC map to the tract map. You will often need to approximate their locations.

b. In which census tracts are the MRC's located?

c. More specific information regarding the extent of the MRC boundaries is found in appendix E of the MRC reports (figure 21). Use this information to draw in the approximate limits of each of the MRC's on the census tract map.

d. How many planned shopping centers are covered in the MRC series for Reno?

e. Which street near the K-Mart Plaza appears to have the most commercial development? How do you know?

f. A detailed map of the CBD is published in the MRC report (figure 22). Use this information to draw the actual boundaries of the CBD on the MRC map.

g. Refer to the tract map to determine which tract(s) are included in the CBD.

Since you now comprehend some of the purposes and uses of the census tract and MRC maps, you are surely ready to tackle the next activity of this exercise. For this task, you will use both sources to designate a trade area for the major centers of retail activity in Reno.

FIGURE 21

Description of Major Retail Centers in Reno, Nevada

RENO, NEV., SMSA

MRC No. 1—Includes the planned center known as "K-Mart Plaza" and establishments on Oddie Blvd. from 2000-2299. (Sparks) (In tract 19)

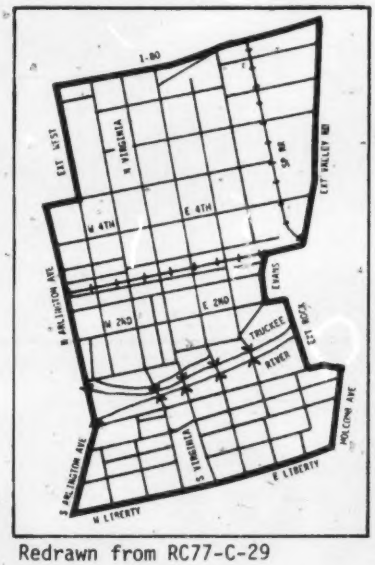
MRC No. 2—Includes the planned centers known as "Park Lane," "Shoppers Square," and "Lakeside Plaza" and establishments on S. Virginia St. from E. Plumb Ln. to Hall Dr., on E. Plumb Ln. from Kirman Ave. to Wrondell Way, and on the north side of W. Plumb Ln. from Lakeside Dr. to S. Virginia St. (Reno) (In tracts 3, 8, and 9)

MRC No. 3—Includes the planned centers known as "Kietzke Center" and "Crossroad Center" and establishments on Kietzke Ln. from E. Peckham Ln. to E. Moana Ln. (Reno) (In tract 22)

Source: RC77-C29 (appendix E).

FIGURE 22

Map of the Central Business District for Reno, Nevada



Redrawn from RC77-C-29

Activity 3

Seldom can the concepts and ideas that are studied in the classroom be applied so easily in the "real world." Many times, one's ideals may be in conflict with those of others from different academic orientations. In addition, the constraints of time, money, and personnel may require that simple solutions be found to resolve complicated problems. So it is with the delineation of trading areas. Because the principal focus of this activity is upon the options that might be used to accomplish this task, only one variable (total population) is considered in this activity. Once you have evaluated the advantages and disadvantages that each option offers, you can embellish it with your own variables, computer algorithms, and survey data.

---

1. Refer back to the tract outline and the MRC maps for Reno (figures 19 and 20) to list the problems that you need to consider in determining the total population within each of the trading areas. (Do not attempt to complicate the matter by discussing the importance of such variables as household income and the age of the population. Those considerations can be dealt with at another time.) For instance, recall that in figures 14-16 the trading area may not coincide with the boundaries of the census tracts. You may decide to solve this problem by (1) including all of the tract's population if more than 50 percent of the tract's area is included in the market area boundary, (2) including all of the population if any of the market area touches the tract, (3) interpolating the population that is in the market area based upon the percentage of the tract's area that is within the boundary (don't forget that the population of a census tract is seldom spread evenly thoughout its area), or (4) creating your own solution to the problem.

2. Review the contents of figure 23 to become familiar with the geographic structure of each table in the Reno SMSA. Your group will need to decide whether to include only the population totals for the central city or those for all census tracts that are located within your market area boundary (you will need to use the totals for split tracts if this option is chosen).

3. Review the selected information that is provided on the characteristics of the retail stores located in each of these centers (figure 24). Will size, as measured by number of stores, sales, payroll, or number of paid employees be an important consideration when you draw the boundaries for the market area? If so, which one is the best indicator?

4. Once these problems have been discussed in class, break up into small groups to arrive at a final solution to the trading area problem. One of six options will be assigned to your group.

5. Because each option involves different assumptions and calculations, be prepared to share your critique of the technique with the class. You should consider the issues of time, cost, simplicity, and conceptual problems (e.g., overlapping market areas, accessibility factors, socioeconomic characteristics, types or mix of stores)

Options:

1. Determine the total population that is included in the trading area for each of the four centers by assuming that each area is made up of the census tract(s) in which the center is located and the census tracts that are contiguous to those tracts.

2. Determine the total population that is included in the trading area for each of the four centers by assuming that a majority of the customers live within a radius of two miles from each of the centers.

3. Determine the total population that is included in the trading area for each of the four centers by assuming that the area is a function of the size of its center.

4. Determine the total population that is included in the trading area for each of the four centers by assuming that (1) each area is a function of the size of its center and (2) customers will travel to the center that is the most accessible (as measured by time). Thus, you will first need to select a measure of size (figure 24); then, develop a justification for deciding the size (probably as a radius from the center) of each area. Once the circles or ovals (of different sizes) have been drawn, you can go to the information included in figure 23 to tabulate the population totals for each center.

5. Determine the total population that is included in the market area for each of the four centers by assuming that 80 percent of the customers come from a radius of 2 miles from the store and the remaining 20 percent come from the rest of the city.

6. Determine the total population that is included in the market area for each of the four centers by assuming that (1) areas do not overlap, (2) they vary according to the size of the retail center, and (3) the entire SMSA population is served by the centers.

FIGURE 23

Total Population for Census Tracts in Reno, Nevada: 1970

Page 1

Washoe County			Reno									
Total	Reno	Balance	Tract 0001	Tract 0002	Tract 0003	Tract 0004	Tract 0005	Tract 0006	Tract 0007	Tract 0008	Tract 0009	Tract 0010
131 048	72 863	58 185	3 313	3 388	4 091	5 077	2 314	863	4 824	2 821	2 904	3 789

Page 2

Reno – Con												
Tract 0011	Tract 0012	Tract 0013	Tract 0014	Tract 0015	Tract 0016	Tract 0017	Tract 0018	Tract 0021	Tract 0022	Tract 0024	Tract 0025	Tract 0026
3 222	1 550	3 097	2 655	2 338	2 836	1 707	4 056	1 197	3 541	3 906	2 771	1 95[illegible]

Page 3

Balance of Washoe County											
Tract 0010	Tract 0011	Tract 0012	Tract 0013	Tract 0015	Tract 0016	Tract 0017	Tract 0019	Tract 0020	Tract 0021	Tract 0022	Tract 0023
3 138	2 638	498	22	13	139	409	5 723	1 378	1 788	1 689	743

Page 4

Balance of Washoe County – Con											
Tract 0024	Tract 0025	Tract 0026	Tract 0027	Tract 0028	Tract 0029	Tract 0030	Tract 0031	Tract 0032	Tract 0033	Tract 0034	
63	19	3 402	2 789	5 574	6 713	5 519	1 703	2 658	1 939	586	

Page 5

Totals for split tracts											
Tract 0010	Tract 0011	Tract 0012	Tract 0013	Tract 0015	Tract 0016	Tract 0017	Tract 0021	Tract 0022	Tract 0024	Tract 0025	Tract 0026
6 927	7 860	3 048	3 130	2 253	3 045	2 116	2 585	4 958	5 969	3 790	7 253

Source: 1970 PHC(1)-172.

FIGURE 24

Selected Statistics for Major Retail Centers and the Central Business District in the Reno SMSA: 1977

Table 1. Statistics by Kind of Business for Major Retail Centers and Central Business Districts in the Standard Metropolitan Statistical Area: 1977

[For meaning of abbreviations and symbols, see introductory text. For definition of SMSA, see appendix D. For description of MRC boundaries, see appendix E. For CBD boundaries, see maps]

SIC code	Kind of business	Standard metropolitan statistical area	City	Central business district	Major retail centers		
					No. 1	No. 2	No. 3
	Retail stores:[1][2]						
	Number	1 650	1 124	138	33	111	34
	Sales ($1,000)	899 000	684 582	78 749	36 121	88 741	41 967
	Payroll entire year ($1,000)	107 242	82 619	10 781	3 869	12 875	4 704
	Paid employees for week including March 12	13 383	10 134	1 131	550	1 849	674
54, 58, 591	**Convenience goods stores:**						
	Number	527	348	47	11	25	4
	Sales ($1,000)	(D)	188 905	12 651	(D)	20 661	5 944
53, 56, 57; 594	**Shopping goods stores (GAF):**[3]						
	Number	482	334	51	17	75	28
	Sales ($1,000)	219 881	(D)	27 9[illegible]	20 182	85 217	32 919
55, 56, [illegible] 591	**[illegible] stores:**						
	[illegible] stores	1	3	4	1	-	-
[illegible] 591, 5	Miscellaneous retail stores[4]	[illegible]	267	57	8	32	8
592	Liquor stores	21	14	7	-	-	-
594	Miscellaneous shopping goods stores	160	126	28	8	25	8
5992	Florists	18	13	3	1	3	-

[1]Excludes SIC 596, nonstore retailers (mail order houses, automatic merchandising machine operators, and direct selling establishments).
[2]For all establishments, including those with no payroll.
[3]Stores in general merchandise, apparel, and furniture major groups, and miscellaneous shopping goods group. These stores specialize in department store merchandise.
[4]Includes sales from catalog order desks.
[5]Includes data not covered by SIC 541.
[6]Includes data not covered by SIC's 592, 594, and 5992.

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